

ILLINOIS STATE BEE-
KEEPERS' ASSOCIATION

REPORT



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JAN 24 1919

Fifth Annual Report

— OF THE —



Illinois State Bee-Keepers' Association

Organized Feb. 26, 1891

SPRINGFIELD, ILLINOIS

Compiled by
JAMES A. STONE, Secretary
R. R. 4, Springfield, Ill.



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JAN 24 1919

FIFTH ANNUAL REPORT

—OF THE—

Illinois State Bee-Keepers' Association

Organized Feb. 26, 1891,

—AT—

SPRINGFIELD, ILL.

COMPILED BY
JAMES A. STONE, SECRETARY,
R. R. 4, Springfield, Ill.

CHICAGO, ILL.:
AMERICAN BEE JOURNAL PRINT,
1906.

LETTER OF TRANSMITTAL.

OFFICE OF THE SECRETARY, }
R.R. 4, SPRINGFIELD, ILL., Jan. 25, 1906. }

*To his Excellency, Charles S. Deneen, Governor of the State
of Illinois:*

SIR: I have the honor to transmit herewith the Fifth
Annual Report of the Illinois State Bee-Keepers' Association.

Respectfully submitted,

JAMES A. STONE, *Secretary.*

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OFFICERS AND MEMBERS

—OF THE—

Illinois State Bee-Keepers' Association

FOR 1906



OFFICERS:

President and State Foul Brood Inspector,

J. Q. SMITH, Lincoln

Vice Presidents—

1st—S. N. BLACK, Clayton

2d—JAS. POINDEXTER, Bloomington

3d—J. W. BOWEN, Jacksonville

4th—J. E. JOHNSON, Williamsfield

5th—AARON COPPIN, Wenona

Secretary— - JAS. A. STONE, Rt. 4, Springfield

Treasurer— . . CHAS. BECKER, Pleasant Plains

12 Mr 19 78 E

v. 5 cont.

12 Mr 19 Ag. sec. 19

LIST OF MEMBERS

—OF THE—

Illinois State Bee-Keepers' Association

FOR 1906

	No. Colonies.	Lbs. Honey in 1905.
Almond Bros., Libertyville	50	800
Augenstein, A. A., Dakota.	9	100
Baxter, E. J., Nauvoo.	225	13,000
Becker, Chas., Pleasant Plains.		
Bevier, M., Bradford.	60	1,500
Black, S. H., Good Hope.	40	400
Black, S. N., Clayton.		
Blocher, D. J., Pearl City.	85	
Bolt, R., R. 3, Fulton.	64	300
Bowen, J. W., Jacksonville.	15	460
Bronell, L. F., Plano.	6	300
Brunner, Fred, R. 1, Coal City.	14	400
Bryant, E. J., 676 Walnut Ave., Elgin.	18	425
Burcham, Chas., Mechanicsburg.		
Cherry, Thos. M., Quincy,		
Clifford, C. E., Marseilles.	30	600
Coffman, D. H., Hamilton.	100	1,200
Cooke, N. A., Woodhull.		
Coppin, Aaron, Wenona.		
Cremers, L. H., East Dubuque.	96	
Crim, S. T., Dawson.		
Crotzer, A. S., Lena.	18	350
Dadant, C. P., Hamilton.		
Delaney, Master Wm., Collinsville.		
Durflinger, Orville S., Box 21, Henry.	14	175
Earnest, D. P., Comstock.		
Emigh, Dr. B. T., Aurora.	30	800
Entsminger, A., Taylorville.	78	3,000
Eve, George, Minonk.	25	500
Fleisher, H. A., Kasbeer.	22	500
Foster, Uriah, Big Rock.		
Frank, J. C., R. 1, Davis.	144	1,800
Frike, Fred J., Elgin.	3	200
Gamash, Jas., Waukegan.	11	200
Glasser, Wm., Dakota.	14	300
Griffin, E. J., Grant Park.	16	650
Hall, B. D., R. 17, Ogden.	9	115
Hazlett, F. B., 214 Arthur Ave., Galesburg.	20	695
Hazlett, G. C., 214 Arthur Ave., Galesburg.		
Heise, Carl C., R. 6, Decatur.	30	310
Hettel, M., Marine.	70	1,000
Hinderer, Frank, Frederick.		
Hintz, August J., R. 3, Lemont.	90	2,100

Hoes, T. Scott, Butler.	38	725
Hoke, J. H., Decatur.	2	125
Holmes, O. B., Jacksonville.	13	175
Homan, W. A., 703 N. 12th St., Quincy.	50	1,500
Honack, Chas., Streator.	8	1,050
Johnson, J. E., Williamsfield.		
Jordan, W. E., Box 435, Herrin.		
Keniston, Jerry, Manhattan.	75	2,600
Kennedy, Miss L. C., R. F. D., Curran.		
Kildow, A. L., Putnam.	160	2,000
Lange, Jno. M., Jr., Monticello, Iowa.		
Large, G. G., Taylorville.	80	1,000
Lavallis, Maurice, Fulton.	7	650
Lawrence, W. G., Chadwick.		
Laxton, J. G., Lyndon.		
Leffer Bros., Hamilton.	97	
Lind, M. H., Baders.		
Longwell, B. R., Rochelle.	77	3,120
Means, Thos. K., Mulkeytown.	22	500
Meincke, Henry H., Oak Park.	45	2,500
Meise, F. A., Coatsburg.	40	650
Michael, S. P., R. I., Spring Valley.	140	4,000
Miller, A. J., Decatur.	25	900
Miller, W. C., Box R., Ottawa.	40	1,440
Moore, W. B., Altona.	12	500
Moore, W. W., R. 1, Ringwood.	20	200
McCullough, Jno. T., Centralia.		
McLeod, D. C., Pana		
Ness, L. L., Morris.	150	6,800
Newcomer, Sam M., R. 2, Polo.	60	800
Norris, Ralph V., 7340 Stewart Ave., Chicago.	8	
Null, Wm. D., Burnside.	88	2,400
Nydegger, John, Danville, Ill.	64	300
Oakes, Lannes P., Metropolis.		
Ostermeier, Jno., Cornland.	30	600
Otter, J. D., Donnellson.	40	
Outhier, Geo. Tea., R. 4, Carthage.	40	4,000
Payne, John W., R. 1, Georgetown.	23	500
Piper, G. M., Chillicothe.		
Plunkett, J. M., R. 2, Palestine.	16	350
Poindexter, Jas., Bloomington.	100	1,300
Porter, Elmer E., Roscoe.		
Pyles, J. E., Putnam.		
Raftery, J. T., Hadley Station.	50	1,000
Ravnaas, Jacob, Rochelle.	8	200
Redmond, Jno. H., Blue Island.	12	1,300
Reed, Geo., Belvidere.	50	500
Riley, W., Breeds.	103	1,000
Robertson, Jas. S., 5319 Ind. Ave., Austin.	8	300
Runland, Peter, Spring Valley, Box 471.	40	800
Scott, W. C., Petersburg.		
Scroggins, A. C., Mt. Pulaski.		
Searl, J. E., Vermont.	40	500
Secor, W. G., Greenfield.	48	1,150
Settle, W. H., Gridley.	72	2,800
Shearer, Hallock, Mt. Carmel.	10	175

Shroutz, Mack, Momence.	110	10,000
Shupe, Frank, Mazon.	45	1,925
Slack, Geo. B., Mapleton.	24	1,050
Smith, J. Q., Lincoln.		
Stabeck, T. K. O., Durand.	17	400
Stage, W. H., Dundee.	41	658
Stone, Jas. A., Springfield.		
Thornton, Jno. A., Ursa.	250	5,100
Tiedt, E. F., Tiedtville.	85	7,800
Tyler, Fred, San Jose.	20	300
Ulrich, G. E., Campus.	12	400
Vogel, Henry, Galena.	30	100
Wachter, Martin, Hinsdale.	27	500
Wagner, F. M., Quincy.	50	800
Walker, Albert, Petersburg.	40	500
Warnock, Jas., R. 1, Annawan.	19	378
Weller, Miss Emma S., Jacksonville.		
Werner, Louis, Edwardsville.	200	3,000
Wiegand, Adam, 282 Clybourne Ave., Chicago.	24	
Yoos, Geo. F., Central City.	165	3,000
Young, Robert, R. 2, Mt. Auburn.	25	400
Young, W. W., Freeport.	20	None
Zachgo, Hugo, Danforth.	54	1,300
Zeller, Mrs. Caroline, R. 35, Peoria.	8	350
Zoll C., Vermont.	24	500

List of Members Coming Through the Chicago-Northwestern Bee-Keepers' Association

HERMAN F. MOORE, SECRETARY.

Allen, Francis A., 40 Gilmour St., Altana, Ont., Canada.
 Allison, A. P., Maquoketa, Iowa.
 Arnd, H. M., 141 Ontario St., Chicago, Ill.
 Baldridge, M. M., St. Charles, Ill.
 Baldwin, A. Y., De Kalb, Ill. (DIED FEB. 20, '06.)
 Ball, W. D., 1017 W. Colfax St., South Bend, Ind.
 Barkemeyer, B. D., 302 Chicago Ave., Oak Park, Ill.
 Bartlett, J. S., Kalamazoo, Mich.
 Bartz, A. C. F., Keystone, Wis.
 Bartz, Miss Clara M., Keystone, Wis.
 Beardsley, E. H., Chicago Lawn Stat., Chicago, Ill.
 Blackstone, Ed, Cumberland, Ohio.
 Blume, W. B., Norwood, Ill.
 Bodenschatz, Adam, Lemont, Ill.
 Bull, Jno. C., Valparaiso, Ind.
 Burnett, R. A., 199 S. Water St., Chicago, Ill.
 Candler, Miss M., Cassville, Wis.
 Chapman, W. B., 7540 Union Ave., Chicago, Ill.
 Clark, Chas., 9720 Logan Ave., Chicago, Ill.
 Cooler, C. W., Eagle Grove, Iowa.
 Coverdale, Frank, Maquoketa, Iowa.

Dadant, C. P., Hamilton, Ill.
Duby, H. S., St. Anne, Ill.
Duff, Peter N., 1849 W. 58th St., Chicago.
Dunean, Wm. Hinsdale, Ill.
Dunlop, Dan'l S., Greencastle, Ind.
Ferguson, S. R., Cedar Falls, Iowa.
Fluegge, Theodore, Bensenville, Ill.
Frank, Jno. C., Earlville, Ill.
Gilbert, L. M., Naperville, Ill.
Glessner, Mrs. J. J., 1800 Prairie Ave., Chicago, Ill.
Heintz, Simon, Palmyra, Wis.
Hiestand, N. A., 226 Watt Ave., Chicago.
Hilton, Geo. E., Fremont, Mich.
Hintz, August J., Lemont, Ill.
Hogge, T. E., 129 N. Trumbull Ave., Chicago.
Holtermann, R. F., Brantford, Ont., Canada.
Horstman, Wm. H., 6759 Morgan, Chicago.
Hubbard, Jno. B., Shipshemanager, Ind.
Jones, G. W., West Bend, Wis.
Kannenbergh, C. F., 416 Marion St., Oak Park, Ill.
Kennicott, E. E., Glenview, Ill.
Kimmey, Fred L., Morgan Park, Ill.
Kluck, N. A., McConnell, Ill.
Lyman, W. C., Downer's Grove, Ill.
Magnusson, Chas., Algona, Iowa.
Marshall, Wm., De Kalb, Ill.
Miller, F. J., London, Ont., Canada.
McAllister, G. H., 2872 N. 46 Court, Chicago.
McCain, Robt. B., Coal City, Ill.
McCarthy, P. H., 1033 West 47th, Chicago.
McQueen, W. C., Elgin, Ill.
Meredith, E. K., Batavia, Ill.
Miller, Dr. C. C., Marengo, Ill.
Mohr, Mike D., Hamptom, Ill.
Moore, Herman F., Park Ridge, Ill.
Mottaz, A., Utica, Ill.
Muchleip, H., Apple River, Ill.
Mussing, Martin, Box 12, Oak Park, Ill.
Nau, John, Burlington, Iowa.
Ohmert, Geo. A., Rockdale, Iowa.
Opfer, A. H., 887 West Sunnyside Ave., Chicago.
Owen, Chas., 536 Alma, Austin Station, Chicago.
Pease, E. W., 2872 N. 45th Ave., Chicago.
Picaman, Gus, Litchfield, Ill.
Ricker, T. R., Cortland, Ill.
Schaper, E. L., Chesterton, Ind.
Scheid, Byron, Bay City, Wis.
Secor, Eugene, Forest City, Iowa.
Seibold, Jacob, Homer, Ill.
Smith, Mrs. R. F., Oakdale, Wis.
Snell, F. A., Milledgeville, Ill.
Stahmer, Paul, Addison, Wis.
Stanley, Arthur, Dixon, Ill.
Stewart, W. H. H., Emerson, Ill.
Stow, Mrs. N. L., 944 Ashland Ave., Evanston, Ill.
Swift, E. C., Ottawa, Ill.

Thomas, Chas. E., 251 East 65th Place, Chicago.
Thompson, J. E. Sen., Carpenterville, Ill.
Tiedt, E. F., Tiedtville, Ill.
Tough, Jas., 1013 Clarence Ave., Oak Park, Ill.
Waldeck, Jno., 670 North Paulina, Chicago.
Weckerle, Mrs. Anna, 12345 Wallace, West Pullman,
Ill.
Wheeler, J. C., 921 Austin, Boul., Oak Park, Ill.
Whitney, Wm. M., Lake Geneva, Ill.
Wichert, A., Mattison, Ill.
Wilcox, F., Maurston, Wis.
Wilson, Miss Emma, Marengo, Ill.
York, George W., 334 Dearborn St., Chicago.
Zeiman, Henry, Harican, Wis.
Zoll, C., Vermont, Ill.

List of Members Coming Through the Western Illinois Bee-Keepers' Association

E. D. WOODS, SECRETARY.

Bridge, Arthur, Galesburg.
Brooks, F. E., Galesburg.
Cave, Jeff W., Kirkwood.
Cook, A. N., Alpha.
Dickerson, N. Y., Abingdon.
Hillman, Joe, Galesburg.
Irwin, J. N., Galesburg.
Johnson, F. E., Galesburg.
Johnson, F. N., Knoxville.
Johnson, J. E., Williamsfield.
Moore, J. H., Brimfield.
Neal, H. V., Galesburg.
Osborne, James, Galesburg.
Paden, James, Galesburg.
Radcliff, J. W., Williamsfield.
Renstrom, S., Woodhull.
Renstrom, S., Andover.
Sheeler, S. R., 738 Clark St., Galesburg.
Springer, Lewis, Galesburg.
Wellbrock, C., 617 Bigelow St., Peoria.
Woods, E. D., Galesburg.

State of Illinois—Department of State

ISAAC N. PEARSON, *Secretary of State.*

To all to whom these Presents shall come, Greeting:

WHEREAS, A certificate duly signed and acknowledged having been filed in the office of the Secretary of State on the 27th day of February, A. D. 1891, for the organization of the Illinois State Bee-Keeper's Association, under and in accordance with the provisions of "An Act Concerning Corporations," approved April 18, 1872, and in force July 1, 1872, and all acts amendatory thereof, a copy of which certificate is hereunto attached.

NOW, THEREFORE, I, Isaac N. Pearson, Secretary of State, of the State of Illinois, by virtue of the powers and duties vested in me by law, do hereby certify that the said, The Illinois State Bee-Keepers' Association is a legally organized corporation under the laws of this State.

In Testimony Whereof, I hereunto set my hand, and cause to be affixed the great seal of State.

Done at the City of Springfield, this 27th day of February in the year of our Lord one thousand
[SEAL] eight hundred and ninety-one, and the Independence of the United States the one hundred and fifteenth.

I. N. PEARSON,
Secretary of State.

STATE OF ILLINOIS,
SANGAMON COUNTY.

ss.

To Isaac N. Pearson, Secretary of State:

We, the undersigned, Perry J. England, Jas. A. Stone and Albert N. Draper, citizens of the United States, propose to form a corporation under an act of the General Assembly of the State of Illinois, entitled, "An Act Concerning Corporations," approved April 18, 1872, and all acts amendatory thereof; and for the purposes of such organizations, we hereby state as follows, to-wit:

1. The name of such corporation is, The Illinois State Bee-Keepers' Association.

2. The object for which it is formed is, to promote the general interests of the pursuit of bee-culture.

3. The management of the aforesaid Association shall be vested in a board of three Directors who are to be elected annually.

4. The following persons are hereby selected as the Directors, to control and manage said corporation for the first year of its corporate existence, viz: Perry J. England, Jas. A. Stone and Albert N. Draper.

5. The location is in Springfield, in the County of Sangamon, State of Illinois. [Signed,]

PERRY J. ENGLAND,
JAS. A. STONE,
ALBERT N. DRAPER.

STATE OF ILLINOIS,
COUNTY OF SANGAMON.

ss.

I, S. Mendenhall, a notary public in and for the county and State aforesaid do hereby certify that on this 26th day of February, A. D. 1891, personally appeared before me, Perry J. England, James A. Stone and Albert N. Draper, to me personally known to be the same persons who executed the foregoing certificate, and severally acknowledged that they had executed the same for the purposes therein set forth.

In Witness Whereof, I have hereunto set my hand and seal the day and year above written.

S. MENDENHALL,
Notary Public.

[SEAL]



Worker.



Queen.



Drone.

CONSTITUTION AND BY-LAWS

—OF THE—

Illinois State Bee-Keepers' Association

✧ CONSTITUTION ✧

Adopted Feb. 26, 1901.

ARTICLE I—*Name.*

This organization shall be known as the Illinois State Bee-Keepers' Association, and its principal place of business shall be at Springfield, Ill.

ARTICLE II—*Object.*

Its object shall be to promote the general interests of the pursuit of Bee Culture.

ARTICLE III—*Membership.*

SECTION 1. Any person interested in Apiculture may become a member upon the payment to the Secretary of an annual fee of one dollar (\$1.00). And any affiliating Association, as a body, may become members on the payment of an aggregate fee of twenty-five cents (25c) per member.

SEC. 2. Any persons may become honorary members by receiving a majority vote at any regular meeting.

ARTICLE IV—*Officers.*

SECTION 1. The officers of this Association shall be President, five Vice-Presidents, Secretary and Treasurer. Their terms of office shall be for one year, or until their successors are elected and qualified.

SEC. 2. The President, Secretary and Treasurer shall constitute the Executive Committee.

SEC. 3. Vacancies in office—by death, resignation or otherwise—shall be filled by the Executive Committee until the next annual meeting.

ARTICLE V—*Amendments.*

This Constitution may be amended at any annual meeting by a two-thirds vote of all the members present—thirty days' notice having been given to each member of the Association.

✧ BY-LAWS ✧

ARTICLE I.

The officers of this Association shall be elected by ballot and by a majority vote.

ARTICLE II.

It shall be the duty of the President to call and preserve order at all meetings of this Association; to call for all reports of officers and committees; to put to vote all motions regularly seconded, to count the votes at all elections and declare the results; to decide upon all questions of order; and to deliver an address at each annual meeting.

ARTICLE III.

The Vice-Presidents shall be numbered respectively, First, Second, Third, Fourth and Fifth, and it shall be the duty of one of them in his respective order to preside in the absence of the President.

ARTICLE IV.

SECTION 1. It shall be the duty of the Secretary to report all proceedings of the Association, and to record the same, when approved, in the Secretary's book; to conduct all correspondence of the Association, and to file and preserve all papers belonging to the same; to receive the annual dues and pay them over to the Treasurer, taking his receipt for the same; to take and record the name and address of every member of the Association; to cause the Constitution and By-Laws to be printed in appropriate form, and in such quantities as may be directed by the Executive Committee from time to time, and see that each member is provided with a copy thereof; to make out and publish annually, as far as practicable, statistical table showing the number of colonies owned in the spring and fall, and the amount of honey and wax produced by each member, together with such other information as may be deemed important, or be directed by the Executive Committee; and to give notice of all meetings of the Association in the leading papers of the State and in the bee journals at least four weeks prior to the time of such meeting.

SEC. 2. The Secretary shall be allowed a reasonable compensation for his services, and to appoint an assistant Secretary if deemed necessary.

ARTICLE V.

It shall be the duty of the Treasurer to take charge of all funds of the Association, and to pay them out upon the order of the Executive Committee, taking a receipt for the same; and to render a report of all receipts and expenditures at each annual meeting.

ARTICLE VI.

It shall be the duty of the Executive Committee to select subjects for discussion and appoint members to deliver addresses or read essays, and to transact all interim business.

ARTICLE VII.

The meetings of the Association shall be, as far as practicable, governed by the following order of business:

Call to order.
Reading minutes of last meeting.
President's address.
Secretary's report.
Treasurer's report.
Reports of committees.
Unfinished business.
Reception of members and collection.
Miscellaneous business.
Election and installation of officers.
Discussion.
Adjournment.

ARTICLE VIII.

These By-Laws may be amended by a two-thirds vote of all the members present at any annual meeting.

C. E. YOCOM,
AARON COPPIN,
GEO. F. ROBBINS.

Formation of the Illinois State Bee-Keepers' Association

SPRINGFIELD, ILL., Feb. 26, 1891.

The Capitol Bee-Keepers' Association was called to order by President P. J. England.

Previous notice having been given that an effort would be made to form a State Association, and there being present bee-keepers from different parts of the State, by motion, a recess was taken in order to form such an Association.

P. J. England was chosen temporary chairman, and C. E. Yocom temporary secretary. On motion, the Chair appointed Thos. G. Newman, C. P. Dadant and Hon. J. M. Hambaugh a committee on constitution.

Col. Chas. F. Mills addressed the meeting on the needs of a State Association, and stated that it was his opinion that the bee-keepers should have a liberal appropriation for a State Apiarian Exhibit at the World's Columbian Exposition.

A motion to adjourn till 1:30 P. M. prevailed.

AFTERNOON SESSION.

The Committee on Constitution reported a form for same, which, on motion, was read by the Secretary, by sections serially.

Geo. F. Robbins moved to substitute the word *shall* for *may* in the last clause of Section 1, Article III. This led to a very animated discussion, and the motion was lost.

J. A. Stone moved to amend the above-named section by striking out the word ladies and all that followed of the same section, which motion led to further discussion and motion finally prevailed.

Section 2, Article III, relating to a quorum, was, on motion, entirely stricken out.

Mr. Robbins moved to amend Article V by adding the words, "Thirty days' notice having been given to each member." Prevalled.

Thos. G. Newman moved to adopt the Constitution, so amended, as a whole. Which motion prevailed.

See Constitution, page 8.

J. A. Stone moved that the Chair appoint a nominating committee of three on permanent organization. Prevalled.

Chair appointed as such committee, Col. Chas. F. Mills, Hon. J. M. Hambaugh, and C. P. Dadant.

Committee retired and in a few minutes returned, submitting the following named persons as candidates for their respective offices:

For President—P. J. England, Fancy Prairie.

For Vice-Presidents—Mrs. L. Harrison, Peoria; C. P. Dadant, Hamilton; W. T. F. Petty, Pittsfield; Hon. J. M. Hambaugh, Spring; Dr. C. C. Miller, Marengo.

Secretary—Jas. A. Stone, Bradfordton.

Treasurer—A. N. Draper, Upper Alton.

Mr. Black moved the adoption of the report of the committee on nominations. The motion prevailed, and the officers as named by the committee, were declared elected for the ensuing year.

Hon. J. M. Hambaugh moved that Mr. Thos. G. Newman, Editor American Bee Journal, of Chicago, be made the first honorary member of the Association. Prevalled.

At this point Col. Chas. F. Mills, said, "Mr. Chairman, I want to be the first one to pay my dollar for membership," at the same time suiting his actions to his words, and others followed his example, as follows:

CHARTER MEMBERS.

Col. Chas. F. Mills, Springfield.
 Hon. J. M. Hambaugh, Spring.
 Hon. J. S. Lyman, Farmingdale.
 C. P. Dadant, Hamilton.
 Chas. Dadant, Hamilton.
 A. N. Draper, Upper Alton.
 S. N. Black, Clayton.
 Aaron Coppin, Wenona.
 Geo. F. Robbins, Mechanicsburg.

J. W. Yocom, Williamsville.
 Thos. S. Wallace, Clayton.
 A. J. England, Fancy Prairie.
 P. J. England, Fancy Prairie.
 C. E. Yocom, Sherman.
 Jas. A. Stone, Bradfordton.

FIRST HONORARY MEMBER.

Thos. G. Newman, Editor American Bee Journal, Chicago.

Bee-Keepers' Association

PREAMBLE.

§ 1. For expenses of annual meetings, per annum, \$1,000; officers to receive no salary.

§ 2. How drawn.

§ 3. Duty of Treasurer of Association.

(Granted in the 44th General Assembly.)

A BILL

For an act making an appropriation for the Illinois State Bee-Keepers' Association.

WHEREAS, The members of the Illinois State Bee-Keepers' Association have for years given much time and labor without compensation in the endeavor to promote the interests of the bee-keepers of the State; and,

WHEREAS, The importance of the industry to the farmers and fruit growers of the State warrants the expenditure of a reasonable sum for the holding of annual meetings, the publication of reports and papers containing practical information concerning bee-keeping, therefore to sustain the same and enable this organization to defray the expenses of annual meetings, publishing reports, suppressing foul brood among bees in the State, and promote the industry in Illinois:

SECTION 1. *Be it enacted by the People of the State of Illinois represented in the General Assembly:* That there be and is hereby appropriated for the use of the Illinois State Bee-Keepers' Association the sum of one thousand dollars (\$1,000) per annum, for the years 1905 and 1906. For the purpose of advancing the growth and developing the interests of the bee-keepers of Illinois, said sum to be expended under the direction of the Illinois State Bee-Keepers' Association for the purpose of paying the expenses of holding annual meetings, publishing the proceedings of said meetings, suppressing foul brood among bees in Illinois, etc.

Provided, however, That no officer or officers of the Illinois State Bee-Keepers' Association shall be entitled to receive any money compensation whatever, for any services rendered for the same out of this fund.

SEC. 2. That on the order of the president, countersigned by the secretary of the Illinois State Bee-Keepers' Association, and approved by the Governor, the Auditor of Public Accounts shall draw his warrant on the Treasurer of the State of Illinois in favor of the treasurer of the Illinois State Bee-Keepers' Association for the sum herein appropriated.

SEC. 3. It shall be the duty of the treasurer of the Illinois State Bee-Keepers' Association to pay out of said appropriation on itemized and receipted vouchers such sums as may be authorized by vote of said organization on the order of the president, countersigned by the secretary and make annual report to the Governor of all such expenditures, as provided by law.

A BILL

For an act providing for the appointment of a State Inspector of Apiaries, and prescribing his powers and duties.

SECTION 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That the Governor, by and with the advice and consent of the Senate, shall appoint a State Inspector of Apiaries, who shall hold his office for the term of two years and until his successor is appointed and qualified.

SEC. 2. Said Inspector shall, when notified of the existence of the disease known as foul brood among apiaries, examine all such as are so reported and all others in the same locality and ascertain whether or not such disease exists, and if satisfied of its existence, shall give the owner or the person who has the care of such apiaries full instructions as to the manner of treating them. In case the owner of a diseased apiary shall refuse to treat his bees or allow them to be treated as directed by the said Inspector, then the said Inspector may burn all the colonies and all the comb necessary to prevent the spread of the disease, provided, said Inspector shall, before burning, give one day's notice to the owner or other person who has the care of the colonies of bees and comb, that in his judgment should be burned.

SEC. 3. The Inspector shall, on or before the second Monday of December in each calendar year, make a report to the Governor and also to the Illinois State Bee-Keepers' Association stating the number of apiaries visited, the number of those diseased and treated, the number of colonies of bees destroyed, and of the expenses incurred in the performance of his duty.

SEC. 4. Any owner of a diseased apiary or appliances taken therefrom, who shall sell, barter, or give away any such apiary, appliance, or bees from such apiary, expose other bees to the danger of contracting such disease, or refuse to allow the Inspector of Apiaries to inspect such apiary, or appliances, shall be fined not less than fifty dollars nor more than one hundred dollars.

The above bill passed the Senate, but failed in the House, on second reading.

FOUL BROOD

—AND—

OTHER DISEASES OF BEES

(Republished by permission of N. E. France, Foul Brood Inspector, of Wisconsin.)

Foul brood—*bacillus alvei*—is a fatal and contagious disease among bees, dreaded most of all by bee-keepers. The germs of disease are either given to young larval bee in its food when it hatches from the egg of the queen-bee, or it may be contagion from a diseased colony, or if the queen deposits eggs, or the worker-bees store honey or pollen in such combs. If in any one of the above cases, the disease will soon appear, and the germs increase with great rapidity, going from one little cell to another, colony to colony of bees, and then to all the neighboring apiaries, thus soon leaving whole apiaries with only diseased combs to inoculate others. The Island of Syria in three years lost all of its great apiaries from foul brood. Dzierzon, in 1868, lost his entire apiary of 500 colonies. Cowan, the editor of the *British Bee Journal*, recently wrote: "The only visible hindrance to the rapid expansion of the bee industry is the prevalence of foul brood, which is so rapidly spreading over the country as to make bee-keeping a hazardous occupation."

Canada's foul brood inspector, in 1890 to 1892, reported 2,395 cases, and in a later report for 1893 to 1898, that 40 per cent of the colonies inspected were diseased. Cuba is one of the greatest honey-producing countries, and was lately reported to me by a Wisconsin bee-keeper who has been there, and will soon return to Wisconsin: "So plentiful is foul brood in Cuba that I have known of large apiaries to dwindle out of existence from its ravages, and hundreds more are on the same road to sure and certain death. I myself took in 90 days in Cuba, 24,000 pounds of fine honey from 100 colonies, but where is that apiary and my other 150-colony apiary? Dead from foul brood." Cuba, in 1901, exported 4,795,600 pounds of honey, and 1,022,897 pounds of beeswax.

Cuba at present has laws to suppress foul brood, and her inspector is doing all possible to stamp the same from the island.

Even in Wisconsin, I know of several quite large piles of empty hives, where all the bees have died from foul brood; also many other apiaries where said disease had gotten a strong foothold. By the kindness of the Wisconsin bee-keepers, and in most cases, by their willing assistance, I have, during the last five years, gotten several counties free of the disease, and at the present writing, March 12, 1902, have

what there is in Wisconsin under control and quarantined. This dreadful disease is often imported into our State from other States and countries, so that we may expect some new cases to develop, until all the States shall enact such laws as will prevent further spread of the same. Arizona, New York (1899), California (1891), Nebraska (1895), Utah (1892), Colorado (1897), have county inspectors, and Wisconsin (1897), and Michigan (1901), have State inspectors. The present Wisconsin law, after five years of testing and rapid decrease of the disease is considered the best, and many other States are now making efforts to secure a like law.

There are several experimental apiaries in Canada under control of the Ontario Agricultural College, also a few in the United States, especially in Colorado, that have done great work for the bee-keeping industry, and their various published bulletins on the same are very valuable. The Wisconsin State Bee-Keepers' Association have asked that an experimental apiary might be had on the Wisconsin experimental farm, but at present there are so many departments asking for aid, that I fear it may be some time before bee-culture will be taken up.

CAUSES OF FOUL BROOD.

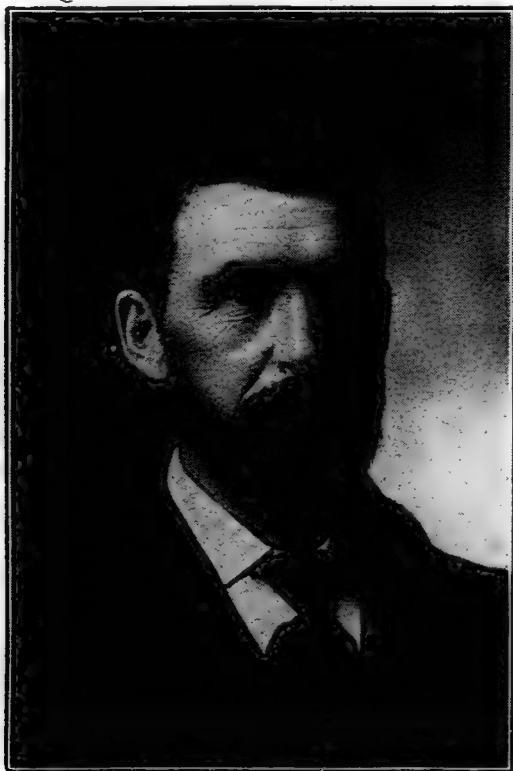
1. Many writers claim foul brood originates from chilled or dead brood. Dr. Howard, of Texas, one of the best practical modern scientific experimenters, a man of authority, has proved beyond doubt that chilled or common dead brood does not produce foul brood. I have, in the last five years, also proven his statement to be true in Wisconsin, but I do believe such conditions of dead brood are the most favorable places for lodgment and rapid growth of diseases. Also, I do not believe foul brood germs are floating in the air, for, if they were, why would not every brood-comb cell of an infected hive become diseased? I believe that this disease spreads only as the adult bees come in contact with it, which is often through robber-bees. Brood-combs should not be removed from any colony on cold or windy days, nor should they be left for a moment in the direct rays of sunshine on hot days.

2. The foul brood may be caused by the need of proper food and temperature. Generally this disease does not appear to be serious during a honey-flow, but at the close of the honey season, or at times of scarcity, it is quite serious, and as the bees at such times will rob anywhere they can find stores, whether from healthy or diseased combs, it is the duty of every bee-keeper to keep everything carefully protected. Hive-entrances contracted, no old combs or any article with a drop of honey in where the bees can get to it. While honey is coming in from the various flowers, quite a portion is used direct as food for the larval bee, and with such no disease would be fed to the bees. Such fed bees, even in a diseased hive, will hatch, as is often the case. I never knew of a case where a bee hatched from a brood-cell that had ever had foul brood in. If the germs of disease are there in the dried scale attached to the lower side-walls, bees will

store honey therein, the queen will deposit eggs, or the cell may be filled with pollen, or bee-bread, as some call it. Said honey or pollen, when it comes in contact with those germs of disease, or the food given the young bee, if in the proper temperature, said germs of disease will grow and develop rapidly.

CAUSES BY CONTAGION.

I fully believe if the history of foul brood in Wisconsin was known, nearly every case could be traced to contagion from diseased combs, honey, or from some diseased queen-



Inspector N. E. FRANCE.

breeder's cages. Here are some instances where I have traced the history of contagion in Wisconsin:

1. Diseased apiaries, also single colonies, sold either at auction or private sale. Several law-suits have resulted in the settlement of some of the cases.
2. Brood-combs and various implements from diseased hives, used by other bee-keepers, and borrowed articles.
3. All the bees in an apiary dead from foul brood, and the hives having an abundance of honey in the brood-combs, said combs placed out by the side of hives so that neighbors' bees might get the honey. From those combs I lined robber-

bees to seven other apiaries, and each time became diseased and were treated.

4. Robber bees working on empty honey-packages in the back yards of grocery stores and baking factories. Said honey came from diseased apiaries, some located in far distant States, even Cuba.

5. Loaning of hives, combs, extractors, and even empty honey packages.

6. Buying honey from strangers, or not knowing where it was produced, and feeding it to bees without boiling the honey.

7. Too common a practice of using old brood-combs from some apiary where the owner's bees have died from "bad luck," as he calls it.

8. Queen-bee—by buying queen-bees from strangers and introducing her in the cages they came in. I have traced several new outbreaks of the disease to the hives where such queens were introduced, and the queens came from distant States. To be safe, on arrival of queen, put her carefully alone in a new and clean cage with good food in it. Keep her in there, warm and comfortable, for a few hours before introducing. The shipping cage and every bee that came with the queen should be put in the stove and burned. I do not think there is any danger from the queen so treated, even from diseased hives, but I do know of many cases where disease soon appeared in the hives where the shipping-cage and bees were put in with the colony. The great danger is in the food in said cage being made from diseased honey. I was called to attend a State bee-keepers' meeting in another State and I asked if any there had had experience with foul brood. There was a goodly number of raised hands. Then I asked, "Do any of you think you got the disease by buying queen-bees?" Again several hands were raised. Even bee-keepers there had traced the disease in their apiaries to the buying of queens, and all from the same breeder. If you get queens from abroad, I hope you will do with her as I have above described. Better be on the safe side.

EXPERIMENTS.

1. A prominent Wisconsin bee-keeper some years ago had foul brood among his bees so bad that he lost 200 colonies before the disease was checked. Having a honey extractor and comb-foundation machine, he first boiled the hives in a large sorghum pan, then in a kettle all combs were melted after the honey was extracted, the honey was boiled and also the extractor and implements used. The bees were returned to their hives on comb foundation he made from the wax made from the melted combs, then fed the boiled honey. Several years have passed and there has been no signs of disease in his apiary since.

2. Foul-brood germs are not always killed when exposed to a temperature of 212 deg. F. (boiling point) for 45 minutes. But in every case where the combs are boiled in boiling water, and same were well stirred while boiling, no germs were alive.

3. Foul brood in brood-combs is not destroyed or killed when exposed to the temperature of Wisconsin winters of 20 deg. below zero, and in one case I developed foul brood from combs that had been exposed to 28 deg. below zero.

4. Honey, if stored in diseased combs, acts as a preserving medium, and in such cases the germs of disease will remain so long as the comb is undisturbed. Four years at least.

5. Honey or beeswax, or the refuse from a solar or sun-heat extractor, is not heated enough to kill foul-brood germs. Several cases of contagion where robber-bees worked on solar extractor refuse or honey.

6. Comb foundation made by supply manufacturers is free from live germs of disease and perfectly safe to use. To prove this experiment beyond doubt, I took a quantity of badly-diseased brood-combs from several apiaries, and rendered each batch of combs into wax myself on the farm where found. Then on my own foundation mill I made some brood foundation. I also took quite a quantity more of said wax, went to two wholesale comb foundation manufacturers, and both parties willingly made my experimental wax into comb foundation just the same as they do every batch of wax. I then divided the various makes of foundation and selected 20 of the best bee-yards in Wisconsin, where no disease had ever been known, had the same placed in 62 of their best colonies, and in every case no signs of disease have appeared. Those same colonies continue to be the best in the various apiaries.

SYMPTOMS OF FOUL BROOD.

1. The infected colony is not liable to be as industrious. Hive entrance with few guard-bees to protect their home. Sometimes fine dirt or little bits of old comb and dead bees in and around the hive-entrance, and often robber-bees seeking entrance.

2. Upon opening the hive, the brood in the combs is irregular, badly scattered, with many empty cells which need inspection.

3. The cappings over healthy brood is oval, smooth and of a healthy color peculiar to honey-bee brood, but if diseased the cappings are sunken, a little darker in color, and have ragged pin-holes. The dead larval bee is of a light color, and, as it is termed, ropy, so that if a toothpick is inserted and slowly withdrawn, this dead larva will draw out much like spittle or glue.

5. In this ropy stage there is more or less odor peculiar to the disease; it smells something like an old, stale glue-pot. A colony may be quite badly affected and not emit much odor, only upon opening of the hive or close examination of the brood. I have treated a few cases where the foul brood odor was plainly noticed several rods from the apiary.

6. Dried Scales—If the disease has reached the advanced stages, all the above-described conditions will be easily seen and the dried scales as well. This foul matter is so tenacious that the bees cannot remove it, so it dries down on the lower side-wall of the cell, midway from the bottom to front

end of the cell, seldom on the bottom of a cell. According to its stage of development there will be either the shapeless mass of dark-brown matter, on the lower side of the cell, often with a wrinkled skin covering as if a fine thread had been inserted in the skin lengthwise and drawn enough to form rib-like streaks on either side. Later on it becomes hardened, nearly black in color, and in time dries down to be as thin as the side-walls of the cell. Often there will be a small dried bunch at the front end of the cell not larger than a part of common pin-head. To see it plainly, take the comb by the top-bar and hold it so that a good light falls into the cell at an angle of 75 degrees from the top of the comb, while your sight falls upon the cell at an angle of about 45 degrees. The scales, if present, will easily be seen as above described. This stage of disease in combs is easily seen and is always a sure guide or proof of foul brood. Such combs can never be used safely by the bees and must be either burned or carefully melted. Be sure not to mistake such marked combs in the spring for those soiled with bee-dysentery. The latter have a somewhat similar appearance but are more or less surface-soiled, and will also be spotted or have streaked appearance by the dark-brown sticky excrements from the adult bees. Please examine closely this half-tone print, which I photographed from a diseased comb containing all stages of foul brood. This comb came from the last living weak colony of a once large and profitable apiary.

TREATMENT.

"A bee-keeper who does not discover foul brood, before his nostrils remind him that there is something wrong with his bees, is not the proper person to treat the case." Dr. Howard, in his valuable book on foul brood, states: "I regard the use of all drugs in the treatment of foul brood as a useless waste of time and material, wholly ineffectual, inviting ruin and total loss of bees. Any method which has not for its object the entire removal of all infectious material beyond the reach of both bees and brood will prove detrimental and destructive, and surely encourage the recurrence of the disease." In Wisconsin I have tried many methods of treatment, and cured some cases with each method, but the one that never fails, if carefully followed, and that commends itself is the McEvoy treatment. Canada's foul brood inspector, has cured foul brood by the wholesale—thousands of cases.

MCEVOY TREATMENT.

"In the honey season when the bees are gathering honey freely, remove the combs in the evening and shake the bees into their own hives; give them frames with comb-foundation starters and let them build comb for four days. The bees will make the starters into comb during the four days and store the diseased honey in them, which they took with them from the old comb. Then in the evening of the fourth day take out the new combs and give them comb foundation (full sheets) to work out, and then the cure will be com-

plete. By this method of treatment all the diseased honey is removed from the bees before the full sheets of foundation are worked out. All the old foul-brood combs must be burned or carefully made into wax after they are removed from the hives, and all the new combs made out of the starters during the four days must be burned or made into wax, on account of the diseased honey that would be stored in them. All the curing or treating of diseased colonies should be done in the evening, so as not to have any robbing done, or cause any of the bees from the diseased colonies to mix and go with the bees of healthy colonies. By doing all the work in the evening it gives the bees a chance to settle down nicely before morning, and then there is no confusion or trouble. This same method of curing colonies of foul brood can be carried on at any time from May to October, when the bees are not getting any honey, by feeding plenty of sugar syrup in the evenings to take the place of the honey-flow. It will start the bees robbing and spread the disease to work with foul brood colonies in warm days when the bees are not gathering honey, and for that reason all work must be done in the evenings when no bees are flying.

"When the diseased colonies are weak in bees, put the bees, two, three, or four colonies together, so as to get a good-sized colony to start the cure with as it does not pay to spend time fussing with little, weak colonies. When the bees are not gathering honey, any apiary can be cured of foul brood by removing the diseased combs in the evening and giving the bees frames with comb-foundation starters on. Then also in the evening feed the bees plenty of sugar syrup and they will draw out the foundation and store the diseased honey which they took with them from the old combs; on the fourth evening remove the new combs made out of the starters and give the bees full sheets of comb foundation and feed plenty of sugar syrup each evening until every colony is in first-class order. Make the syrup out of granulated sugar, putting one pound of water to every pound of sugar, and bring it to a boil. As previously stated, all the old comb must be burned or made into wax and so must all new combs made during the four days. No colony is cured of foul brood by the use of any drug."

A. I. Root, of Medina, Ohio, says: "The starvation plan in connection with burning the combs and frames and boiling the hives has worked the best in treating foul brood. It never appeared after such treatment, though it did in some cases where hives were honey-stained and not boiled, thus confirming the theory or fact of spores."

All the difference from the McEvoy treatment that I practice is this: I dig a deep pit on level ground near the diseased apiary, and after getting a fire in the pit such diseased combs, frames, etc., as are to be burned are burned in this pit in the evening, and then the fresh earth from the pit returned to cover all from sight. Often I use some kerosene oil, a little at a time being poured on old brood-combs or those having much honey in, as they are hard to burn. If diseased combs with honey in are burned on the surface of the

soil there is great danger; the honey when heated a little will run like water on the soil, and in the morning the robber-bees will be busy taking home the diseased honey that was not heated enough to kill germs of foul brood.

I also cage the queen while the bees are on the five or six strips of foundation. It helps to keep the colony from deserting the hive and going to other colonies.

R. L. Taylor, Michigan University experimental apiary, reports: "The plan that the colony be shaken out into another hive after being allowed to build comb for four days, I have proven in 100 cases to be unnecessary."

In Wisconsin, I, too, have cured several cases by the one transferring, when honey was not coming in very freely, but it is better, and a great saving of time to both bees and owner, to exchange in three or four days those foundation starters, for full sheets of foundation. Diseased brood-combs, and those with honey in, if melted in a sun or solar extractor, the wax, honey or residue is not hot enough to kill germs of foul brood. This I have proven by several experiments. It must be boiled and well stirred while boiling to be safe.

I do not believe in, or practice, burning any property, such as hives, bees, beeswax or honey that can be safely treated and saved. Many times it is poor economy to save all, and as so many bee-keepers are not so situated as to keep all diseased material from robber-bees while taking care of it, the best and only safe way is to burn the diseased combs and frames.

UTAH.

Utah has county inspectors, and from one who has remarkable success I copy the report of his method of treatment:

"Wherever found, it should be dealt with earnestly and with dispatch. If the colony is weak, I recommend smothering the bees, and in order to do this without letting a bee escape, take a tablespoonful of sulphur and place it in the entrance of the hives, if there is any breeze, turn the hive so it will blow in the entrance. Then fire the sulphur and it will soon kill the bees. This should be done early in the morning before any of the bees are flying, as one bee escaping from the hive might carry the disease to any colony with which it may take up its abode. If the colony is a strong one, I would keep the entrance partly closed so as to prevent any other bees from getting in. Then as soon as fruit-blossoms come out so the bees can obtain honey I treat them. I procure an empty box of any kind so it is clean, then find the queen, put her in a screen-wire cage which is easily made. Take a small piece of screen, roll it up and tie a string around either end, cork up one end, then place the queen and a few workers for company in the cage and place in the other end cork. Put same in this box and shake all the bees out of their hive into the box. This must be done in the evening when no bees are flying. Keep the queen in this box 24 to 48 hours, allowing the bees to fly in and out as they please. Next take a clean hive with good, healthy combs or foundation and shake bees into it, letting the queen go and they will

be free from disease. The old combs are melted into wax, bringing same to a good boil. Often washing with boiling water any hives or implements that might contain disease. Wherever strictly followed this has effected a cure."—C. Wilcox, Emery Co., Utah.

PICKLED BROOD.

Some seasons pickled brood is quite bad among bees, and in a few cases I have known it to reduce large colonies, even large apiaries to doubtful hopes, but those same colonies, after I gave them treatment, were in a month free from all disease. Sometimes it takes as careful handling as if foul brood. I do not believe it is contagious, for all I have seen in 60 colonies in one apiary badly reduced by it. As an experiment one of my out-apiaries had 50 colonies at one time with pickled brood. I treated them and all were soon free from dead brood. At the same time I took 10 of the worst brood-combs where at least two-thirds of the brood was dead, and placed those combs in other strong, healthy colonies. They at once cleaned out the dead brood and reared as nice brood as one could ask for.

SYMPTOMS.

The larval bees (in last of May and through June) show light-brown spots, a little later the cappings have small holes in—the cappings are not sunken or dark-colored as in foul brood. The dead bee will be at first swollen, with a black head, dried to a hard bunch and often turned up—China-man-shoe like. The skin of the dead bee is quite tough, and, if punctured, the thin, watery fluid of the body will flow as free as water, often a little yellow or brownish-colored from the dissolved pollen from the abdomen of the bee. It has very little or no smell, does not at any time stick to the walls of the comb, is easily pulled out of the cell, is never ropy or sticky, and if the colony is properly cared for, the bees will take care of themselves. Plenty of liquid, unsealed honey and pollen near the brood, and hives so protected as to keep bees and brood comfortable on cold days and nights.

Never put bees on old black brood-combs, or those with dead brood in; better make wax of the combs and give the bees full sheets of brood-comb foundation.

TREATMENT.

Keep all colonies strong, with plenty of unsealed honey near the brood, and if hives are properly sheltered so as to be warm on cold days and nights there will be little or no pickled brood. If the queen is old, shows weakness by putting several eggs in one brood-cell and nursing several others, so that the brood is patchy, I would kill such a queen, feed the bees a little, and when queen-cells were started, remove them all and give them a queen and bees, between two of her own brood-combs from a hive where she has lived. I do not think pickled brood is often the fault of the queen, but rather a lack of proper food and heat in the hive. In most cases a shortage of liquid honey, or moldy pollen, even in hives with

plenty of sealed honey in the outer combs. There is a time in spring in Wisconsin between dandelion and white clover bloom when there is no honey coming in from flowers and often cold days and nights so that the live bees consume the liquid unsealed honey first, and cluster in a compact body to keep warm, the result often is the larval bee just changed from the egg to a tender little grub, is either starved, half-fed or chilled so that it grows slowly and too often dies, and we first notice this about the time white clover honey begins to come in. In other parts of the State, where pickled brood appeared it was from the same cause, and at other dates, which was due to a difference of time of honey bloom.

Wherever I fed daily some honey or even sugar syrup, and kept the hive warm, all dead brood soon disappeared; while in the same apiaries other colonies affected and not so treated, continued bad for some time, but got rid of it as soon as treated.

Strong colonies of bees in the fall with a young laying queen, and an abundance of good honey sealed or capped by the bees, if properly cared for during winter whether in the cellar or in chaff hives, wintered out of doors in sheltered location, seldom have pickled brood, chilled or other dead brood, or dysentery, and are the colonies that give their owner profit.

BLACK BROOD.

Black brood is another fatal and contagious disease among bees, affecting the old bees as well as the brood. In 1898, 1899 and 1900 it destroyed several apiaries in New York. Last year I found one case of it in Wisconsin, which was quickly disposed of. Dr. Howard made more than a thousand microscopical examinations and found it to be a distinct form of bacteria. It is most active in sealed brood. The bees affected continue to grow until they reach the pupa stage, then turn black and die. At this stage there is a sour smell. No decomposition from putrefactive germs in pickled brood. In black brood the dark and rotten mass in time breaks down and settles to lower side-wall of the cell, is of a watery, granulated, syrupy fluid, jelly-like, is not ropy or sticky as in foul brood, and has a peculiar smell, resembling sour, rotten apples. Not even a house-fly will set a foot upon it.

TREATMENT.

Best time is during a honey-flow, and the modified McEvoy plan, much as I have treated foul brood, by caging the queen five days, remove the foundation starters and give full sheets, keeping queen caged five days longer. As great care should be taken of diseased hives, combs, honey, etc., as in foul brood.

DYSENTERY.

Dysentery among bees in Wisconsin in the spring of the year, often is quite serious. Many colonies die with it. Dysentery is the excrements of the old bees; it is of brownish

color, quite sticky and very disagreeable-smelling, and is sometimes mistaken for foul brood.

CAUSES.

1. Bees confined too long in the hives, so that they can no longer withhold their excrements, and are compelled to void the same on the other bees and combs.
2. Poor winter stores gathered in the fall from honey-dew, cider-mills, sorghum mills, rotten fruit, also some kinds of fall flowers.
3. Old and especially moldy pollen or bee-bread.
4. Hives too cold or damp. If moisture from the breath of the bees is not carried out of the hive by some means, such as through a deep cushion of some kind over the bees that will absorb moisture and at the same time retain the heat, or by some means of ventilation, so that all is dry and comfortable. If mold forms on the combs or cellar so damp as to form mold, there is great danger the bees will have dysentery and die.

TREATMENT.

1. First of all, have an abundance of combs of sealed clover or basswood honey in brood-frames carefully saved, and see that each colony is wintered on such food. Three or four such combs will winter a fair colony safely if confined on those combs late in the fall and the hive contracted to fit the same. This is one of the most important conditions for success in wintering.

2. If in the fall the bees have gathered this unwholesome honey from the above-named sources, it should all be extracted and either exchanged for those honey-combs, or feed the bees good honey or sugar syrup until winter stores are secured. This should be done before cold weather in the fall.

3. Hives contracted and made comfortable, whether in cellar or outdoors.

4. If wintered in chaff hives outdoors with feed as above directed, and there come one or two warm spells during winter so that bees can have a cleansing flight, they will not have dysentery or dead brood, and will be much stronger when clover opens.

If wintered in the cellar the bees will not need as much honey, and if the winters are generally long with doubtful warm spells, the cellar will be best. But to keep the bees from dysentery, so often fatal to cellar-wintered bees, they should have such winter stores as above spoken of, then the cellar kept at a uniform temperature, about 42 deg. F., ventilated so the air is fresh, and no mold will form in the cellar. Fresh air-slacked lime on the bottom of the cellar may help if it is damp or has poor air.

5. Dysentery will not appear if bees are kept on sugar syrup, or best-grade white clover or basswood honey, and are in a dry place, either sheltered by cellar or chaff-hive.

FORMALDEHYDE EXPERIMENTS.

Formaldehyde, by the medical experts, is now considered the best of all disinfectants; I have great faith that we may yet learn its use, and save infected foul-broody combs.

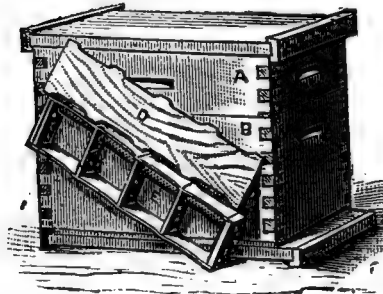
Mr. C. H. W. Weber has conducted some valuable experiments. Early in 1903 I decided to do some experimenting, having inspected several infected apiaries. We got a carpenter with well-seasoned lumber to make some perfectly airtight boxes to hold brood-frames, two tiers deep, as per the photograph herewith. Mr. Weber's lamp was used in several trials. Where we used a greater amount, and longer confined than instructions called for, the combs with all cells unsealed, containing dried scales of foul brood, after fumigating and airing were placed in hives with bees on them. The chemical action was such that the bees at once cleaned them out, and no signs of disease has appeared in them since. But in those combs having honey or pollen in the infected cells, or those capped over with brood underneath, they were so covered that the gases did not destroy the disease, for those treated July 27, in 41 days each of those combs had foul brood again.

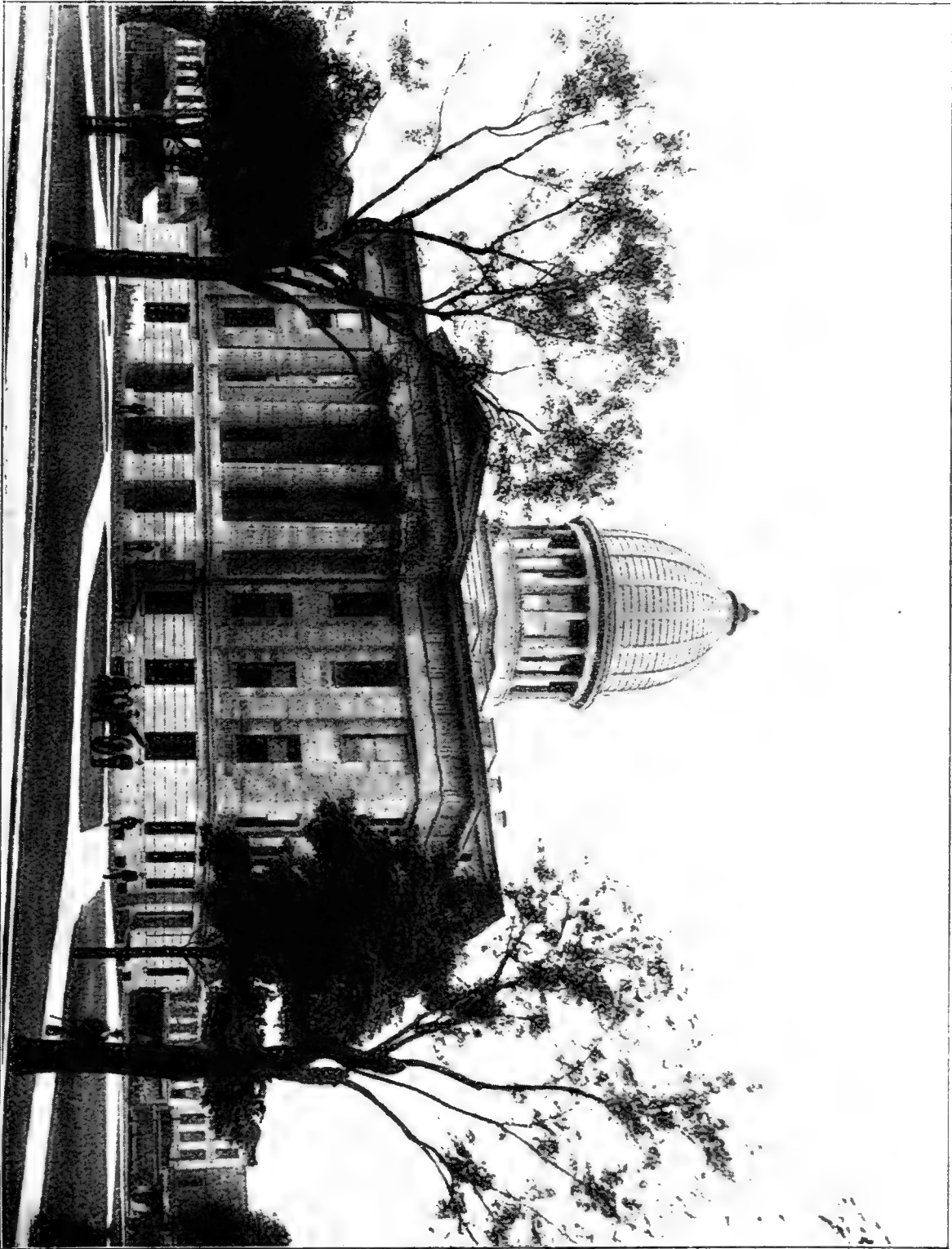
To prove that the gases do not go through wax-cappings, I took some healthy hatching brood, fumigated it, then took it out and cut away the cappings, and some of the bees had life enough to crawl.

I believe we should go slow and do careful experimenting. I know old, diseased combs are worth more rendered into wax, or those containing honey or pollen in infected combs are not safe to use again. A sheet of comb foundation is worth far more. I believe it is possible, if *carefully* done, to fumigate infected combs where there is nothing over the disease, so that those combs can be saved.

Platteville, Wis., March 17, 1904.

N. E. FRANCE.





Court House of Sangamon County, at Springfield, Ill., where the State Bee-Keepers' Conventions are held.

TREASURER'S REPORT

From November 15, 1904, to November 20, 1905.

To the Illinois State Bee-Keepers' Association:

The following shows the amount of money received and paid on orders during the year to November 20, 1905.

ACCOUNT OF THE STATE APPROPRIATION.

RECEIPTS.

November 15, 1904, balance on hand	\$ 879.74
July 15, 1905, rec'd from State Treasurer..	1,000.00
Total receipts.....	\$1,879.74

DISBURSEMENTS

November 16, 1904, Dr. C. C. Miller, Order No. 1.....	\$ 27.00
“ “ N. E. France, “ 2.....	12.46
“ “ George W. York, “ 3.....	8.75
“ “ C. Becker, “ 4.....	1 63
January 23, 1905, J. A. Stone, “ 5.....	27.08
February 2, “ George W. York, “ 6.....	32.55
May 6, “ George W. York, “ 7.....	360.00
May 6, “ J. A. Stone, “ 8.....	11.28
May 26, “ J. Q. Smith, “ 9.....	50 00
July 7, “ J. Q. Smith, “ 10.....	111.65
July 19, “ W. G. Lawrence, “ 11.....	15.00
August 7, “ J. Q. Smith, “ 12.....	105 50
Sept. 5, “ J. Q. Smith, “ 13.....	103 85
Sept. 19, “ Charles Becker, “ 14.....	46.34
Sept. 23, “ J. Q. Smith, “ 15.....	28 60
Paid on orders.....	\$ 941.69
Balance on hand.....	938 05
Total	\$1,879.74

GENERAL FUND.

Received from J. A. STONE, Secretary.

December 29, 1904.....	\$ 20.75
January 23, 1905.....	27.08
April 22, 1905.....	45.00
Total General Fund on hand.....	\$ 92 83.

RECAPITULATION.

Balance in State Fund.....	938 05
Balance in General Fund.....	92 83
Total of both Funds on hand	\$1,030.88
Add error.....	15.73
	\$1,046 61
Less orders unpaid.....	6 00
Net balance on hand.....	\$1,040.61

CHARLES BECKER,

Treasurer Illinois State Bee-Keepers' Association.

Approved: C. P. DADANT,
S. N. BLACK,
S. T. CRIM,

Auditing Committee.

Report of the 15th Annual Meeting
— OF THE —
Illinois State Bee-Keepers' Association

Held in the Supervisors' Room at the Court House,

Springfield, Ill., Nov. 21, 22, 1905.

The meeting was called to order with President J. Q. Smith in the chair.

The order of business was taken up as in the by-laws.

On motion, the reading of the minutes of the last meeting was dispensed with.

Mr. Baxter—I think, Mr. President, the next thing in order will be your address.

Mr. Smith—I am not in the habit of having an address. The next thing in order is the Secretary's report.

The Secretary reported that during the year we had gotten out of 2,000 copies of the Fourth Annual Report at a cost of \$320.75, besides the expense of postage and printing to send them out. He suggested that for the next Report we have only 1,000 copies printed, and enough of them bound in cloth for the members of the Association. He also stated that the plan for increasing our membership, by amending the constitution allowing members through other associations at 25 cents, had, with the additions from the Chicago-North-western, made our membership the largest we had ever had, viz., 172. And we look for a larger membership in 1906, as we have the promise of the membership of the Western Illinois Bee-Keepers' Association.

As to our financial statement, the Treasurer's report will give that. Our books balance excepting a six dollar order given to the foul brood inspector, which he still has in his possession, showing balance in State Association treasury of \$92.83, and in the State appropriation fund, \$947.78.

As the fees come in from the members we send them by return mail—a receipt, and when they are coming in rapidly we do not send the dues to the National oftener than we can send 10 names at one time, then we can enclose a bill, and not be troubled to get postal order, and have never lost a dollar yet.

Pres. Smith—I think we ought to appoint an Auditing Committee to audit the Secretary's and Treasurer's books.

A motion was made that the Secretary's report be approved and placed on file. Carried.

The President appointed C. P. Dadant, S. N. Black and S. T. Crim, as the Auditing Committee.

Pres. Smith—The Treasurer's report is the next in order.

Treas. Becker—I wish to state before reading the report that there seems to be a difference between the Secretary's and Treasurer's books, and I want to say that my report for

this year dates from the beginning of the convention last year to the present time.

The Treasurer's Report was read and placed on file.

Pres. Smith—The Auditing Committee can audit the reports this afternoon.

Mr. Baxter—Are there any disbursements from the General Fund?

Mr. Stone—I guess they are all paid, except the one I have against the State Fund, the Treasurer did not read the last item, and the reason of this is that November 18 an order was given to the President, and he still has it in his pocket. The order was for \$6.00, and makes the difference between the Treasurer's and Secretary's accounts.

Mr. Black—There might be some orders back that have not been sent.

Mr. Stone—I guess they are all paid except the one referred to. The books can be balanced exactly when the President presents his order for payment.

Mr. Baxter—I think the report of the Treasurer should be placed on file.

Pres. Smith—When the reports are audited there will be found no difference. This account goes back to our last Annual Report.

The Treasurer's Report was approved and placed on file.

Pres. Smith—The reports of the Secretary and Treasurer will go to the Standing Committee. We would now be glad to hear the report of the Legislative Committee.

Mr. Stone—The Legislative Committee reports as follows:

REPORT OF THE LEGISLATIVE COMMITTEE.

The Committee met at Springfield, all three of the members present, and drafted a Bill covering all we thought was needed. (See page 14 of the last Fourth Annual Report.) We placed a copy of the same in the hands of Senator Berry, and one in the hands of Representative Oglesby.

We were all present when the Bill which had previously been offered in the House came before the House Appropriation Committee. They objected to the bill as it was. Said it should be divided—the appropriation part of it to be one Bill, and the Foul Brood Bill another, the latter to become a permanent law.

In the next place one of the members (we withhold his name, but will not forget it) moved to cut the amount of the appropriation to \$1,000, and accused us of always trying to increase the amount, when the truth was we had never before asked for more than \$1,000.

Then after we had formulated a Foul Brood Bill they objected to it because it gave the State Association the right to appoint the inspector, and said the Governor, would sign no such Bill. So at the suggestion of the Governor we went to the Attorney-General, and together we agreed on the Bill—see previous page of this report. (Page 16 of Fourth Annual

Report) This Bill went through the Senate, and failed in the House, while the Appropriation Bill was passed and signed by the Governor.

Some member, or members, of our committee had been in attendance upon the members of the Legislature weekly, and semi-weekly.

We are of the opinion, from the influence that has been brought to bear on the Legislature by the bee-keepers, that in the future we will obtain these Bills, as well as one to prevent the spraying of fruit-trees while in bloom.

JAS. A. STONE,
J. Q. SMITH,
CHAS. BECKER,

Legislative Committee.

Pres. Smith—The Committee did not argue against the appropriation; they were willing to give us that; it was the law part; they didn't want to create another office for a government appointee.

Mr. Stone—They wouldn't allow us to appoint an inspector or give power to the inspector, but they give us \$1,000 and let us do as we please as to the inspector. It seems to me the Bill given us is very loose compared with the one we asked—requiring the Governor to appoint the inspector, when they wouldn't let us appoint the inspector, and then give us \$1,000 and hardly tell us how we are to spend it. This ought to be discussed before we have another Legislative Committee appointed.

Pres. Smith—When I make my report, I will give my statement.

Mr. Dadant—As I understand it, this is a report of the Committee. I move the report be received and the Committee continued.

Mr. Black—I second that motion.

Motion prevailed.

Mr. Dadant—I believe the Committee has done well considering the obstacles in their way. I believe if we get before the Legislature the same as the other States, the number of which is increasing all the time, it will support our theory and induce them to do the same way with us that they do in other States. We should bring up the fact that a great number of States have passed laws on foul brood; that is the important thing with us; the publishing of our report is not of such great importance as the abolishment of foul brood. I think we should get the same law as other States have in this matter.

Mr. Stone—The Legislative Committee have always brought to bear all the points suggested by Mr. Dadant, and all others that could be furnished, and applied to them once a week and sometimes twice. I might as well say on another subject, a short time ago our Treasurer received a list from the Secretary of State and sent it to the Secretary to have him answer the questions, and perhaps the Treasurer can remember something of the matter. He wanted to know the standing of the State Bee-Keepers' Association, the purposes for which it was organized, and the things that they

were doing for the good of the bee-keepers, and we answered the questions the best we could. This is to go into a "Blue Book," he called it, and is to be published. We sent him answers to make two pages of the size of the statute as it is written, taking about 500 words for one page of the statute. We believe that the different things we can do along this line will be for the benefit of our Association. The day is coming when our Association will be more important than it is to-day.

REPORT OF THE STATE FAIR PREMIUM LIST COMMITTEE.

Pres. Smith—Any report from the State Premium Committee?

Mr. Stone—Only what was given in the Secretary's report of the accounts.

Pres. Smith—We know the State Agricultural Association are ready to continue the premium list for next year.

Mr. Black—They told me they were getting the worth of their money—the largest attraction of any for the amount of premiums given.

Mr. Stone—They have been perfectly satisfied.

Mr. Black—They expressed it so to me.

Pres. Smith—Unfinished business. Anything under that head.

Mr. Stone—The President spoke of the premium list. There is one thing about that premium list I wish to speak of, and that is the first premium on beeswax, which is \$15.00, the second premium, \$10.00, and the third premium is \$5.00, isn't that it?

Mr. Becker—Yes, sir.

Mr. Stone—The first premium for displays in designs in beeswax is only \$10.00 now. Things can be made out of beeswax that are as artistic, and create as much of a display, as anything made, and \$10.00 does not pay the cost of getting them up. We went to a great deal of trouble with designs. We made the Lincoln Monument and worked on it for two weeks, and the premium was only \$10.00. It attracted so much attention that the State Commissioners tried to get us to take it to the World's Fair, but they wouldn't give us anything to do it—said we could get the benefit in advertising. We don't have to advertise to sell our goods, we told them, and it seems to me that the premium ought to be raised, or we will stop trying to make anything to get that premium. While we are spending our time to get \$10.00 another fellow gets \$15.00 where not half the work is required.

Pres. Smith—The question should be put before the Agricultural Board, to raise the premium for the display of Designs in Beeswax.

Mr. Stone—If we were authorized to suggest that to them, the Superintendent has spoken favorably about it. We don't get anything because we don't ask for it.

Pres. Smith—If you don't ask for it you don't get it.

Mr. Black—Is there a committee on premiums?

Mr. Stone—Yes, sir. We call it the Premium List Committee.

Mr. Black—Could they make some suggestion of that kind to the Superintendent?

Mr. Stone—Perhaps, if this Association took steps they would listen to them.

Mr. Baxter—I move the Committee be authorized to ask for a premium of \$25.00, or at least \$15.00; \$25.00 if possible.

Mr. Becker—I don't think it would be quite in order to ask that amount because we might ask but not receive it. It is true the premium ought to be raised on display of design in beeswax. It ought to be raised to \$15.00, making it the same as on a collection of beeswax. The way it is now with the display of beeswax, there is almost as much work in making that display as there is in the designs. I am in favor of having that increased if we can, but if we ask \$25.00 we won't get it. Now there is another thing on that list that has been cut out for several years. I have spoken about it time and again, and of course last year, or a year ago, the Fair Association didn't do very well, or the year before, and I didn't think it was proper to ask for anything else. They cut us out on the premium on amber honey, and we had it up to three years ago, but it was dropped out of the list in this locality. We have a premium on the basswood and on sweet clover honey, but very few in this locality get pure basswood honey; still we have a premium on it, but we all get fine amber honey, and have no premium on it at all—simply on our collection of amber honey, and this matter ought to be looked after. If you have the Committee do anything, let them attend to that, and I think the only way we can get it is to get after our Superintendent. He is very willing to help us all he can. If we were to drop out, the Dairy Building wouldn't have much in it. The people don't pay any attention to the dairy implements; they come in around the honey exhibit. The other exhibitors had to make extra efforts, and make a great noise, to hold their attention. The honey exhibit was what attracted the people; the other exhibits had little interest for them. They ought to know the interest we have for the people of the State.

Mr. Bowen—I know they appreciate the honey exhibit; they would raise the premium or do anything in reason to keep it.

Mr. Black—That is just the point. If we make a display, as we have, they will be willing to have us continue to do so and to give premiums. They will try to encourage anything that pays, and at the State Fair this season the honey exhibit was what held the crowd. That is what we should work for, to have a display that will interest the people who attend, and if we can only convince the managers of the Fair that we are doing this, we can expect more, and they will give us a liberal premium. Now, I think a motion is before us, and I will second it, that the Committee be asked to increase the premium on the designs in beeswax, and that they look for any other part that will add to the display.

The President stated the question.

Mr. Baxter—I believe it is for the good of the State in general, and if the honey attracts a crowd they ought to in-

crease the premium. I think it is proper that there should be a premium for Spanish-needle honey, for instance, and for sweet clover, another for heartsease, another for white clover, and one for the best amber honey. We must look to the State in general, if those premiums are sufficiently large it will attract a larger display, and selections can be made of the best.

Mr. Black—I suppose comparatively few people can make a display of basswood honey. I can't get enough to make a display as the majority of bees around here can't get it; but most places can get the amber honey, and there is no premium for this except in large displays of honey, and the show at the Fair tends to increase the consumption of it. It will be good for the State if the people at large would use more honey.

Mr. Becker—I want to say one thing more, and it is this: The State Bee-Keepers' Association have made the exhibits at the Fair what they are. You remember the time when there was no rule to govern honey exhibits, and you remember the time that parties came with two or three hundred pounds of honey and got the premiums? I remember it very well, the first or second year of the Fair. Now in order to make an effort to receive the first premium on all of the honey, it won't do for him to come with any amount less than 1,300 pounds of honey; that is the amount he has to have if he wants to score for the first premium. It sometimes takes as much as 6,000 pounds of honey, and they have to be put into separate packages, and there is considerable work and lots of experience connected with it. I believe if the Committee would lay it before the State Board of Agriculture, and they understood it, they would increase our premiums all the way through the list. When I go to the Fair I want to get first premium, if I can, but it takes me from a month to six weeks' hard work to get ready for the State Fair. I have to put the honey into jars, and clean them, and then probably have to heat them all over before going to the Fair to prevent candying. It takes lots of time. Putting it into packages and making designs takes lots of work, and I believe they ought to increase our premiums—at least some of them. It was time our premium list was revised. We have had no change for five or six years.

Pres. Smith—Anything further on this question? All in favor of it signify by saying "Aye." Carried.

Mr. Stone—Are we to understand that this Premium List Committee are to ask for a general revision of the list, or just a change on the points named?

Pres. Smith—A general revision, I believe.

Mr. Baxter—That was the motion, to raise the premium on designs in beeswax and the amber honey.

Pres. Smith—Next comes the reception of members and collection of dues. The dues have been paid.

Mr. Becker moved to adjourn until 1:30 p. m., which motion was carried.

FIRST DAY—AFTERNOON SESSION.

Pres. Smith—Miscellaneous business is next.

Mr. Stone—I don't know of anything under that head that remains unfinished.

Pres. Smith—We have to stop for a while, for the next thing is the election of officers. We might open the question-box. If any member has anything that he would like to bring before the meeting it will be proper now.

Mr. Stone—We have always had our election on the afternoon of the second day.

Mr. Miller—It will be proper to ask questions.

Mr. Stone—I suggest we open the question-box.

FEEDING BEES LATE IN THE FALL.

Mr. Miller—While you are getting it ready, I will ask this question: Suppose you have a colony you have examined at this time of the year and found they haven't enough honey to carry them through, how do you feed them?

Mr. Dadant—I take it that to this question there is only one solution, and that is the feeding of sugar candy, put it right over the combs. Bee-keepers know how to make sugar candy, and by placing it right over the combs the bees reach it. While I think the honey will go a long way, they will eat less of sugar candy than of honey. It is good food, especially for bees in winter. If I had a good cellar and they needed feeding, I would put them into the cellar before I gave them the candy.

Mr. Miller—I will ask Mr. Dadant if he feeds clover honey in the frame.

Mr. Dadant—I think it would be more economical to feed sugar candy.

Mr. Black—That is right, if it is not too cold to get into cellar. I had some colonies in September (I had many colonies of bees at that time), and thought they had to be fed. I was busy and didn't get to them until the latter part of November. I took them to a darkened room and fed three of them very satisfactorily that way. I put them into a warm room and put the sugar and honey underneath. It seems to be all satisfactory if one has frames from either side that are full of honey. Another point is to ventilate enough. I know a friend who keeps some frames of honey purposely to put in, in the spring. He puts in frames that are filled. He has quite a number in stock to feed.

Mr. Johnson—Last year, along the latter part of February, we had some hives I could look into, and when I examined them I found several combs out of honey, and I tried this candy above the frames, the way Mr. Abbott told us to make it, and I lost colonies that seemed to starve to death with no honey in the hive. I found that if you leave some space—2 or 3 inches—between the frames, let your comb honey, if you have it 2-3 full, down from the top, giving a space over, where they can take the honey from above, and bring it down but not from below and bring it up. In that way I had 10 colonies in fine shape that were fed section

honey. There was one thing of which I was a little doubtful, and I would like to hear about it: I asked Mr. Dadant because he had experience in that line. It is where you lay the frame of comb down to take that honey through to the clusters.

Mr. Smith—Mr. Johnson has a paper, and we would like to hear from him if he has brought it with him.

Mr. Johnson—I prepared a paper, but I don't know whether I ought to take up the time or not.

Mr. Stone—We would like to ask the other members if any of them have papers.

Mr. Johnson—There is a saying that a small man chooses a big subject, and I am no exception, and I don't know whether you will agree with me or not.

HOW TO PREPARE FOR THE HONEY-FLOW

This is a subject on which many bee-keepers differ in opinion, but I will try and tell how I am able to obtain the best results in building up or getting colonies strong in spring, so as to be ready for the honey-flow.

First, let me say that if a colony is just fairly strong in young bees, with all the brood in the hive that they can take care of, and only a few field-bees, they are not ready for the honey-flow, but they should have a large force of bees over 15 days old. From close observation I find that in a good honey-flow bees that are only 15 days old will beg in as fielders. We should also have many younger bees to build comb and do other indoor work. When we do give attention to this matter we often find that the hives do not become well filled with bees until the honey-flow has been on for some time, and thus we lose a good share of our crop, and get our bees strong about the time the honey-flow closes; thus the field-bees become consumers instead of producers.

In the spring, in my locality, the soft maples that grow near the water's edge along the river begin yielding pollen during the last part of March or first of April. After the maples, is the elm, then red willow, box-elder, wild gooseberry, wild plum, Japan plum, and pears, then cherries, apples, and last of the tree fruits are the wild crab-apple; then raspberry, blackberry, and last, white clover and basswood. Now if we could have fine weather during all this bloom my bees would need no tinkering with at all, as they would be in fine shape to take care of the honey-flow; but nearly every year I find that we have so many bad-weather days that often the bees can only work on this early bloom a part of the time, and thus they do not build up to strong colonies as they should. So I try to produce artificially, as near as I can, the same results as though the weather was favorable. This I do by stimulative feeding, and although I am aware that I am treading on dangerous ground, I will explain how I do this.

Dr. Miller has been asked the question, "Shall I feed to stimulate brood-rearing in the spring? and shall I spread the brood?" His answer was in this wise: "Stimulative feeding

and spreading brood is a pretty safe thing for a beginner to let alone;" which is no doubt true, but I would answer it in this way:

Stimulative feeding is important, and brings good results *if properly done*; but spreading brood in the spring should never be practiced, as it nearly always results in harm. If bees are fed properly they will spread the brood as fast as they can cover it to keep it warm.

My hives all face the east, and in winter and spring they are covered with four thicknesses of newspaper on all sides except the front of the hive. It is very necessary that the hive be warm during cold spring winds. I use an empty super over the brood-frames which contains clean rags, cloths, carpet, or anything that is clean and warm. I feed only at dusk in the evening, and feed only sweetened water, using about $\frac{3}{4}$ luke-warm water and $\frac{1}{4}$ honey or sugar, and never begin feeding until maples are in bloom.

I use an atmospheric feeder, which is made by punching small holes in the *edge* of the cover of a pint Mason fruit-jar, or jelly tumbler. This feeder I place upside down on a little block on the brood-frames under the cushion or cloths. If a Mason jar is used, 2 empty supers as required, as one is not high enough; but usually I use jelly tumblers, and for ordinary colonies that have considerable honey in their hives I consider one tumbler full enough at one feed; but if they are a little short of honey I give them a full pint.

When the day has been warm, and they have been gathering pollen freely, they are not fed at all, unless they are short of honey.

The reason I feed sweetened warm water thus is as follows: It does not tax the strength of the bees to the extent that it does for them to fly out in the cold wind and sip the almost ice-cold water from the puddles on the ground. Bees carry lots of water in the spring to be used in rearing brood, and I am satisfied that each colony loses many—perhaps thousands—of bees that become chilled by carrying cold water; not only so, but the temperature of the cluster of bees in the hive is lowered, and thus the brood becomes chilled.

Some bee-keepers claim that feeding causes bees to fly out more in cold weather, but I find that when I feed as above described they do not. They may buzz around in the morning, but if they have a supply of warm sweetened feed the evening before, they soon become satisfied; while colonies suffering for water will send a lot of bees for water, and thus they dwindle. Any practical bee-keeper can readily see that a few more bees reared in early spring, and a few saved from becoming chilled, will mean many more bees later on when they are so much needed. And if many more are reared, and many saved, a very strong colony at the beginning of the honey-flow will be the result.

There is, one more point I wish to mention, which is this: When a colony of bees are fed every evening when the day has not been favorable, they have a continual income of food, and brood-rearing will be steady, and not spasmodic. Not only so, but the bees will evaporate this sweetened water

to some extent, and their continual activity will cause the queen to become more prolific in her egg-laying.

Now I doubt not many bee-keepers will say that a tumbler of sweetened water would not amount to much, but I find bees should not be fed much, but just enough to supply water for the brood, and have continual work.

Three years ago I succeeded in getting 250 pounds per colony on the average, $\frac{3}{4}$ of it being comb-honey, and I increased my colonies 400 per cent, notwithstanding they were very weak in the spring. I have some neighbors who are pretty well up-to-date bee-keepers, but they did not feed in the spring, and none of them averaged 100 pounds per colony.

Some bee-keepers will say that if you succeed in getting your colonies in a very flourishing condition, they will spend their time in swarming, and not in gathering honey. Let me say that such is sometimes the case, but if you succeed in getting very strong colonies the swarms will be large, and if manipulated properly, they will gather lots of surplus honey.

If white clover is abundant and shows signs of profuse blooming, or if basswood trees show signs of abundant bloom, I give first a super of shallow frames—combs if I have them—and let the bees use them for brood-rearing until the beginning of the honey-flow. This will prevent the swarming fever, to considerable extent.

I have had new swarms, when they were very large, to fill 60 sections in less than 2 weeks; but of course not cap them all.

A colony of bees gather at least from 100 to 200 pounds of honey annually to keep up brood-rearing, and for winter stores, even if we get no surplus; and if I have a clover or basswood honey-flow, with plenty of bees in each colony as fielders, it won't take long to get an extra 100 pounds of surplus honey per colony.

J. E. JOHNSON.

Williamsfield, Ill.

Mr. Dadant—I think Mr. Johnson is exactly right in his advice, and in the facts that he sets forth. I have been in favor of stimulation for years, and I recommend it, but of course a great many people attempt their stimulation of colonies at the wrong time; that will have to be abolished. I used the preparation that Mr. Johnson suggested, but I think I mixed it too watery, I think probably a little richer food would be better, but I don't believe in giving too much water to bees; they don't go after water when they can get fresh honey. If they get fresh honey it will be just right.

Mr. Stone—I would like to ask Mr. Dadant why he doesn't use much water? Do you think it makes too much moisutre in the hive?

Mr. Dadant—It evaporates at the surface; that is the only reason I have for saying that I think Mr. Johnson is right.

Mr. Johnson—My idea is to produce artificial food, as near as can be obtained, to the natural honey-comb. That of nature is very clear, and has a good deal of water in it;

it has to be evaporated, and that is the natural way, and it seems to me the proper way. I leave a good deal of honey so they don't have to live from hand to mouth. I don't feed them anything on the days they work. It is a good thing to keep it warm, and to feed it only in the hive. In fact, I have tried outdoor feeding and I don't want any more of it. I always feed inside the hive, and find it the best way. I think a great deal of water is used when the bees are gathering; they get this water naturally, but some days they don't get it, and when it is cold you see them going in different directions for nothing but water. They will have cold water, and you see them around the pumps where they will get chilled. I believe a great deal of foul-brood is caused by them getting water.

Mr. Black—A good many things have been said about stimulative feeding. I tried it and thought I had discovered how to get my bees in good condition, and I was very successful. I stimulated about half of those I had, and I doubled the quantity of honey from them and thought I was away ahead. Those not stimulated seemed to want to swarm and be idle and lie around. The idea that we should give the honey in the condition that it comes from the field, I don't think good. I think that much labor in evaporating is thrown upon the bees and is unnecessary. Nature knows how to do it, and the nearer we get to Nature the better we will succeed. We must remember that Nature gives us only a pattern, and we have made the improvements artificially, and while there are certain rules of Nature which must be followed it is well to use artificial means.

Mr. Miller—I have had some experience in the last year. I practiced stimulative feeding and found the rules mentioned were very satisfactory; and two years ago, when I took my bees out of the cellar there were several colonies that were not what they should have been. I had almost given up getting anything from the small amount of bees, and I practiced stimulative feeding, and, as Mr. Black said, it has resulted grandly, and I do it very much in the way Mr. Johnson has said. I use the queen-excluder with the cap over it. I produce only comb honey, have lots of boxes with caps to cover the honey-board. I have a little where the bees can handle it without falling in the honey. I put them on the honey-board and feed them. A small amount is better than a large amount, because it makes activity, and they will go out, so I feed a small amount that they may go out-doors. I have found it wonderfully successful. I have been surprised at the result. I give them plenty of ventilation, and don't fear the swarming business. Stimulative feeding produces great increase of bees. If you properly ventilate the hive, and give plenty of room, this stimulative feeding is great. No question about it, if it is done at proper seasons of the year.

Mr. Black—A great many argue against stimulative feeding because they say the bees will swarm to death. I don't care whether they swarm or not. If you have a big colony you get lots of honey whether they swarm or not. I have

had 3 years without one swarm; they gathered 230 pounds of honey, but they are large enough to work in 3 supers at one time. Where I get a large flow I put them on starters. I didn't put them on combs, for too many of the bees work in the lower super. I want all the upper story with the queen for the honey-flow. If you get the colonies in good shape before the honey-flow they will stay together and not swarm; you get lots of honey, and even if they do swarm they will get lots of honey.

Mr. Stone—This is an important question. You don't know how many people want these reports, just for information on this line. They want the reports for what they can get out of them, and that is one of the principal things they want information about.

Mr. Black—A good many times some point I think I understand very well, and some one gets up and gives me an idea worth a great deal. I think too many persons are in the habit of thinking that every one understands it, and it is dropped. I have come to the conclusion that I don't know about stimulative feeding, and I have practiced it for the last 25 years.

Mr. Stone—I am with Mr. Black along that line. There has been a subject in the bee-papers that talked for and against stimulative feeding. Some are afraid to stimulate because it will make their bees swarm. I want to say there are a good many things we can learn. Just a little paragraph will give you an idea, and set you right on something that you had been skeptical about.

Mr. Black—The honey will last if all the covers are down perfectly air-tight.

Mr. Miller—There is possibly one objection, in my opinion, that in regard to the amount. I prefer a small amount. In feeding a small amount by stimulative feeding in the top of the hive, there is no trouble to follow up a few colonies of bees. I find that whenever I put in honey in the spring the bees won't work; a small amount is better. I feed in the morning.

Mr. Johnson—There is one point I have tried some, and I have pretty well settled it to my satisfaction. It doesn't pay to feed in the morning; I want to feed in the evening, whether in the spring or fall, because there is then no danger of robber-bees. In the spring, if you feed in the evening they will store quite a bit of honey. If the day is fine they will work well while feeding. There is one thing more that I thought of as Mr. Black spoke, that is, the syrup should be thinner. I think that is one of the main reasons why people have failed with stimulative feeding—feeding it so thick that it will make them rob. If you feed it thin they won't get excited, and if it is fed in the morning, I think it is a bad time, as they will get excited and they will rob. In feeding in the evening, and feeding the syrup thin and warm, I never have had any trouble with robbing.

Mr. Stone—I would like to ask Mr. Johnson if he ever tried putting the feed in the portico of the hive in the evening, and let it remain there over night.

Mr. Johnson—Yes, I tried that. That was the trouble—it caused robbing.

Mr. Stone—Did you go there early in the morning and take it away?

Mr. Johnson—Not very early; I am not an early riser.

Mr. Stone—When you went there you found it all gone, and the bees robbing, because you should have taken it away before the "early bird" was out.

Mr. Johnson—I made a practice of feeding a little at night. They would take it, but sometimes they didn't find it at all that



J. Q. SMITH,

President Illinois State Bee-Keepers' Association.

night—the other bees found it. The Vice-President of the Northern Illinois Bee-Keepers' Association was the man that gave me the idea on feeding, he is the Dr. Miller of our Association. He has a box that fits right over, and the bees go into it; the other bees can't find it without going into the hive. He feeds in the daytime, and has pretty fair success.

Mr. Stone—I like that idea.

Mr. Johnson—When he feeds that way he only punches holes on the side next to the hive, and about 6 or 8 small ones. I don't like out-door feeding except they feed in the hive.

Mr. Stone—I have thought about having a screen shut off the portico, and feed at night, and take it away in the daytime to keep out robber bees from other hives. Where the cover on the hives were disturbed late in the season, and they don't have time to fill up the cavities, they get frozen out in the winter, and you would lose the colonies entirely, because of the propolis being broken and the cold air getting in. Mr. Becker will bear me out in saying there was a sale in his neighborhood, and a good many colonies were sold, and but few of them survived the winter; it was in the winter time, and Mr. Becker bought 10 of them and other neighbors 6 to 10, and very few of them survived the winter at all. They didn't know whether removing them in the winter, or people looking in, had disturbed them. They froze to death. That led me to believe we should have a way to feed without taking off the covers. It doesn't pay to winter bees in the cellar, they sometimes winter well in there, and sometimes very poorly. They get the dysentery, and are in a worse condition than if they were wintered outside.

Mr. Black—I think night feeding is the better way, for two reasons: First, there isn't any chance to work; they have the whole day to work in, and are not distracted from their work; and, second, because of robbing. Now, very frequently we know you can tell by offering a little honey at the hive how the honey-flow is. Last season I experimented. I thought they were getting nothing. I took some honey on my finger and offered it to them and they refused it. Three days before they would swarm all over my hand to get it. I think it is better to feed at night.

Mr. Miller—Feeding in the daytime is my belief, because it gives the bees a chance to go in and out, and a general interest is taken in the hive; it is my belief that feeding in the morning will prevent robbing.

Mr. Johnson—Of course, we always differ on these things, and probably always will. A friend of mine feeds in the frames all the time, he has no trouble. I am able to do it all right for a time, then the first thing I know I start robbing. Some bees will keep up robbing all the time without stealing from the colonies to any great extent. It seems to me that I found bees that would make a business of slipping into the hive when you are feeding, and rob without making a big fuss.

Mr. Smith—I have seen bees slip into the hive, and slip out, and the bees won't molest them. So far as stimulating goes, I am in favor of it; I have had success with it. I have quite a number of maple trees, and I take a blunt instrument or axe, and scrape the bark as high as I can reach, and the sap flows, and it seems as it flows down the water is all evaporated out of it; the bees take it readily as long as the sap continues to flow.

Mr. Black—Do you think the sap is beneficial to them?

Mr. Smith—It must be or the bees wouldn't take it. They need water, and this sap has enough sweetness in it to assist them with their brood.

Mr. Baxter—I have noticed in the fall, when the crop is short, the bees go to the cider-press and get juice that is not good for them; but they can't discriminate as to what is good for them, and what is not.

Mr. Smith—They do not prefer the juice, but they will take it.

Mr. Baxter—They don't know what is good for them.

Mr. Johnson—I don't think they would touch it in spring.

Mr. Stone—I would like to ask Mr. Dadant a question. When feeding inside of the hive do you recommend putting it into the super?

Mr. Dadant—Yes, for stimulation for spring.

Mr. Stone—Would you do same late in the fall?

Mr. Dadant—We don't do stimulative feeding in the fall. When feeding in the fall carry them into a warm room.

Mr. Stone—I thought it was dangerous to take off the cover of the hive late in fall if wintered out of doors, and I think they need stimulating as much in the fall as in spring.

Mr. Dadant—If I understand it right, they should be stimulated the same in the fall as in the spring.

Mr. Stone—When you feed in the fall you put the bees into the cellar don't you, and give them honey enough to supply them?

Mr. Dadant—In the spring it is as Mr. Johnson says—feed that will do them then will not do at all in the fall. Feed regular food in the spring, and a very little at a time; at the same time don't give such a small quantity that they will starve. If you give a quantity as in the fall, and if you don't use judgment they will fill the combs full. If you feed them 15 pounds of honey when they need it in the fall, the amount of breeding will be sufficient.

Mr. Stone—Don't you have swarms that will die in the fall if you don't feed them? I let them die. I don't feed very much unless I see so many light ones that I am likely to fall below 75 or 80 colonies, as I do not desire over 100.

Mr. Dadant—Don't let them starve.

Mr. Stone—A colony of bees is not worth much to me. I would like to know why those bees from that sale died.

Mr. Dadant—A question of that kind is hard to answer, I would have to know the condition of honey, how other bees in the locality wintered, and in what sort of weather. They might have died anyway; and it might have been moving them in the winter, and then, again, they might have gone back to the old place. There are so many things to consider when moving bees in the winter, and it is difficult to say just what might be the cause of their death.

Mr. Baxter—I can't agree with Mr. Stone, I can't afford to let any of my bees die. I have been in business for twenty-seven years and never had to feed my bees to keep them alive till this fall, when I had to feed them to keep them from starving; but I think it was time well spent. The last three years my bees have brought me

over \$3,000, clean profit. It would be very foolish to let them starve.

Mr. Stone—I don't want the impression to go forth that I don't believe in feeding bees, for as I do not make a speciality of it, I only want enough colonies to supply my house apiary.

Mr. Baxter—I think stimulative feeding is right. I have done a great deal of it, and have found it profitable. I have tried it enough to know that there is big profit.

Mr. Black—I am glad to hear Mr. Baxter's talk, and very glad to have it come into the record. It is something to stimulate those who are handling bees throughout the State of Illinois. A man who has made money handling bees ought to know how to do it, and, if he can do it, it is a proof that others can do it. In regard to wintering, it seems off the track, but I want to say that with but two exceptions, I have never had any severe winter losses. They winter just as well on the summer stands without any preparation. Last season I didn't touch them and they came through all right. Some died in May after fruit-bloom, but the majority came out in good condition without any loss whatever. One thing that has a great deal to do with successful wintering, is to have a proper number of young bees late in the fall. I think we might easily stimulate and have many bees in the fall. I like to have a sufficient number of young bees in the fall to carry them through the winter and prepare for a honey crop the next season.

Mr. Miller—In my stimulative feeding I was surprised to find I got about 1000 pounds of honey from 25 colonies. I am with Mr. Black concerning the young bees; we need them in the fall very much.

Mr. Stone—If I may say a word in self-defense, this is the thing I do in the beginning of the honey-flow: When I find my hives are getting very heavy, and pretty well filled in the brood-chamber, I think they have plenty of honey, and plenty of room for brood, I then put on a surplus case for extracting, or for comb honey, when the hive is in that condition. I make my bees provide for themselves, and never extract anything from the brood-chamber. After they provide for themselves, then I look out for the surplus. If I don't get any surplus, I see that my bees get plenty in the hive below. Thus I do not need to stimulate my bees, yet I would do it if I thought they needed it. I always lose a few from spring dwindling, and I always lose some in the fall. If a colony is very light in the fall, I generally lose it. I get swarms that store 100 pounds of comb honey. I don't want to go on record as saying that I don't feed bees, for I consider that bees are worth a great deal, but it is cheaper for me to get my bees from the increase of those I have than to try to save the late swarms—that is, as long as I have as many colonies as I need.

Mr. Black—In other words, I think Mr. Stone can keep as many bees as he wants without wintering weak colonies.

Mr. Johnson—The way I understand Mr. Stone, if he

has a colony weak in bees and honey it doesn't pay to try to save them. I don't think it does if you neglect a colony till it gets weak and not much honey, it doesn't pay to go to work and try to winter them. Mr. Dadant brought up the point of feeding in the fall. I fed about 200 pounds of honey this fall for stimulating purposes. I feed unfinished sections, and feed it along in October. I would rather feed it from the middle to the last part of October, as that is a good time for the bees to go into winter quarters. I don't begin to feed them till the latter part of September.

Mr. Black—Occasionally we have a swarm in September, and I remember some 50 years ago that I had a swarm on October 11, and it stored enough honey to winter them very well. That is an exception to the rule; I don't remember hearing of such a case before.

Mr. Crim—I had about 95 colonies of bees that did well, and I moved them in February. They were strong at the time, but a good many froze out, and when spring came they dwindled; when I opened the hives, I found some had plenty of honey inside while others had none at all. I lost about 46 colonies. Now in regard to feeding in the spring, I have a plan but I don't know whether it will work or not. It worked 4 years with wholesale stimulating. I got some boxes made, lined with beeswax, and placed them in the apiaries when the weather was warm, before the fruit-bloom comes, and fed them in these till spring. I removed these boxes one cold day where the bees could go after them, when the warm days came. I feed my bees all they will take till the fruit-bloom comes.

Mr. Black—Were you going to show the bees where the food was going to be?

Mr. Stone—I would like to ask Mr. Dadant if the bees he wants to have it, will be the ones to get it.

Mr. Dadant—That is the reason I don't want outdoor feeding, for I found whenever there was an uproar other bees would come at once to see what was the cause of it, and you often find you are feeding your neighbors' bees, if there is not a neighbor for 2 miles; still there will be some strange bees in the neighborhood. I prefer to feed inside of the hive because I know what I am feeding; and another thing, in outdoor feeding the strong colonies get the largest share, and the weaker colonies get very little. You want to feed the weakest colonies more regularly. The strong colonies will send out their bees, and the weaker ones stay away, and don't get any.

Mr. Becker—Never neglect the weak colonies. Last fall I went in to winter quarters with 100 colonies and came through in good shape. I got surplus honey this year. I have had 50 colonies on the same amount. Fifty colonies can get enough to live on, but it didn't keep 100 colonies. I can get better results with 50 colonies than with 100. Another thing, when I had 100 colonies I was out of hives and had to use old boxes. I am satisfied from my own experience that the place can be overstocked with bees. If you do not have so many bees I believe you can

get along without feeding. I don't think it pays me to feed them, and run the risk of getting anything out of them.

Mr. Baxter—As Mr. Crim says, circumstances alter cases, and those circumstances are in the management. A man must know how to act according to circumstances. If you do that you will succeed. It is not easy to say you are going to have a honey-flow in the spring, but if you have a good lot of clover and plenty of bees you are reasonably sure there is going to be a honey-flow. My bees last spring—and Mr. Dadant knows I am not a bee-keeper, I am a fruit-grower, although I have 200 colonies of bees—came out in good shape, but the wetness of April and May was very much against them. I tried stimulating; I had some colonies that were much run down, but I didn't let them go, I took care of them, and the result was I got 130 pounds of white clover honey from each. Did it not pay me? It did not take much time—I attended to it all myself, and looked after my fruit interests also this fall. There should have been the fall flow during October and September. It is to be supposed they will store honey at that time of the year. It pays to take care of them well; it doesn't take much time, and it does lots of good: I don't know anything about swarms, for I don't get them.

Mr. Becker—I think the bees should be in good condition to get the honey-flow. You can't tell at what time the honey-flow will come—there are exceptions to all rules. I have seen the ground white with clover, and no honey; it happened this fall. I have often seen the fields yellow and white, and still the bees getting nothing. Now if the honey is not there they can't get it. You can't get blood out of a turnip.

Mr. Black—I understood Mr. Baxter to say we ought to be able to know whether we are going to have a honey-flow or not,

Mr. Baxter—If the winter is normal the probability is that when the time comes there will be honey, and it is your duty to get your bees in condition to take care of the clover when it comes.

Mr. Becker—I asked the question last fall at the convention, Will we have a white clover honey crop this year? Several of us said, "Yes." That is all right, we will have a honey crop. Now I find that we may sow, but the chances are we may not reap, and that we may do all we can, but unless we have the weather to help us it will be a failure. In Sangamon County we didn't get much honey at all. Then take 60 miles east of here they had a crop of white clover; and you go west up to as far as the Illinois River, and north to Chicago and Minneapolis, and they had no white clover honey at all. The white clover was killed last fall; just about this time it dried up, and there was white clover here, and no rain in March or April and 4 inches of rain on the first day of May. Therefore, I say that what is probably good in one locality wouldn't work in another, and what is good for one person will not

always work for another, and we can't tell just what will happen to our particular locality.

Mr. Crim—I find that bee-keepers ought to be fixed for any emergency. I have only 55 colonies of bees, that went into winter quarters, and I have over 150 empty hives all fixed for next spring. My idea is in the spring of the year to do some equalizing—take the heavy and give to the weak, and feed them till the brood comes. How can we expect to reap an abundance of honey unless we feed our bees so they can store it. We look for that, and I think we ought to be prepared.

Mr. Bowen—I want to suggest that we are switching off the track, and I think we have talked about this subject long enough. The paper was on stimulating in the spring. We don't know whether we are going to have a good honey-flow, but if the prospects show we have a chance of a good honey-flow I, of course, say we ought to prepare for it. I missed it this year, and I got quite a bit of honey, but not what I expected. This thought was suggested to me about outside feeding: It is something I don't do under any circumstances, even if there are no other bees near me, for I treat my own bees right in the hive. A colony that is strong doesn't need the stimulating. In outside feeding the probability is that the weak colonies will have but a very small share of it, where if you feed in the hive each one gets what he needs.

Mr. Black—It seems to me that you are right. My friend asked for advice, and I told him to come down here tomorrow and he would get it. I don't use extracted honey always when I feed. I may be an old foggy, but I guess the man that has had the experience that I have had will not go for extracted honey. I am in a county where there are various flowers; there is more profit in comb honey than in the extracted.

Mr. Johnson—I have been producing both the comb and the extracted honey. I think there is not much profit in producing extracted honey, as I would have to look at my colonies more carefully. They get too much in the top story and not enough in the lower story. Another thing, you can't get as much for extracted honey. During the last 2 or 3 years I have been trying to train my customers up to eating extracted honey. Some of them won't eat anything but extracted honey. I tried this with one colony; I took the strongest I had then, and gave them especial attention. I gave them shallow frames, and let them rear brood in another set, and I finally had them trained till they filled 3 of the brood-chambers and 3 supers, and I got 150 pounds of extracted honey from that colony, and they have about 80 pounds left for winter. The best I got of comb honey was 60 pounds per colony. I don't suppose I could have done this with any but the strongest colony.

Mr. Black—Do you think that was an average, or an exception?

Mr. Johnson—No, this was one of the best colonies I had.

Mr. Black—The labor and profit would have been equal if you had one-half extracted and the other comb honey.

Mr. Johnson—No, it was no profit to produce all extracted honey.

Mr. Black—They gave you extracted honey, but didn't they give you that much less comb honey as well?

Mr. Johnson—Well, no, I had comb honey. This one colony of bees gave me 60 pounds; the other was 150 pounds. Of course the seasons are different this year. We had a honey-flow that they would store in these extracted combs when they didn't do anything in the other. Two years will make so much difference.

HOW TO USE THE STATE APPROPRIATION.

Mr. Stone—We have a question here, "How shall the State appropriation be used?"

Mr. Black—The way to do the most good for the State in general.

Mr. Stone—I believe the whole question is involved in the way we use it. We will use it the best we can. The Executive Committee have it in charge, and they use it for publishing this Report, and for the extermination of foul-brood. You see what has been done. Everyone understands that pretty well. If they don't, they can find out from our inspector of foul brood. It will be well to hear him tell us what his experience has been.

Pres. Smith—I can give some of it now.

Mr. Johnson—In asking that question, it is not how it has been used, probably, but how we can use it to the best advantage.

Mr. Black—I think a suggestion could be made to make it more beneficial to us all.

Mr. Stone—The Committee are always ready for suggestions as to how it should be used. We see the amount in the Treasury is over \$900, and last year it came up to \$1,000, and if it keeps on increasing we will get over \$1,000 by the end of next year. We ought to use it all. If we don't do good work with it the State will cut down on our appropriation. We did intend to use more this year. We asked for \$1,200, that we might use \$700 for foul-brood and have the balance for this report. I would like to get the ideas from the Association as to the publishing of the Report. The Executive Committee thought it better to have 50 copies of it cloth-bound, and leave a few for Committee work in the legislative halls. We send these off to the bee-papers, giving them a nice, bound copy. I don't know whether it will meet with approval or not, but I would suggest that we print enough of the cloth-bound copies to give one to each member, and others go to bee-keepers; 25 cents hardly pays for it.

Mr. Dadant—How many direct members have we?

Mr. Stone—92.

Mr. Dadant—What does it cost to print them?

Mr. Stone—We paid over \$400 to get 2,000 copies, 50 of which were cloth-bound.

Mr. Bowen—I would like to suggest that the money in the Treasury could not be used to better advantage than to give every member of this Association (whether he be a direct Member or not, just so he is a Member of this Association), one of the cloth-bound copies. I find in the Western Illinois Association, and probably the same in this, that there are some bee-keepers who have quite a few bees, but you can't get them to join an association. The Report will get them to join, and this Association needs to get as many new members as it possibly can get. If you can show any prospective member a cloth-bound book like that, and say that every member gets a book like this, it will go a long way to get them to join. I think the best thing to do is to have this Association as large as can be, and get as many names as possible, and it will be more powerful.

Pres. Smith—I had a copy made of notes on inspecting, had it with my papers, but it has been misplaced so I shall have to take it from memory.

Mr. Stone—We would rather have it that way.

REPORT OF THE STATE INSPECTOR.

Pres. Smith—I was in Whiteside County, where there is a lot of foul brood. I was called to go to Pope County, along the Wabash River. I had been in Whiteside County and so far had found the bees free from disease. Where I found the disease I put them on foundation, or told those parties how to do it, and later in the season when I made a trip there I found everything nice and clean. I believe that we can accomplish more by doing something to educate the bee-keepers than we can by a compulsory law on foul brood; still, we must fight for the foul brood inspector for the desperate cases. Down in Wabash County, the home of Mr. Shearer—I wrote him I could be there, and he notified everyone he knew, and to those he didn't find he wrote postal cards, and I think I met 230 there; they agreed to organize a County Association, and try to exterminate foul brood. I think more can be done in this way than by going around and spending the money.

Mr. Bowen—I do not know how it may be in other States, or in other localities, but Mr. Smith visited in our locality and our people were willing to let him examine their bees because he has a good way in going about among them; probably another inspector might find trouble. The only trouble with us is in getting him to come.

Mr. Stone—Probably they read the law in Illinois.

Mr. Bowen—The bee-keepers that have read up upon these questions we will not be likely to have any trouble with; it is the bee-keepers that haven't read, that we are likely to have trouble with. But by going at them in the way Mr. Smith does, we will not need to have the compulsory clause. I don't believe we need it at all, if we can get a good many other things we might ask for, to leave that out. Anyone gets suspicious if we ask for something compulsory, and I noticed in our locality that it is the up-to-date bee-keeper that

is posted; the farmer bee-keeper is not. The up-to-date bee-keeper will send for queens, and get the disease, and then the neighbor that has box-hives gets the disease, and it would be unfair to say, You get these cleaned up or we will burn up your hives! It would be better to set a certain time, and very few will object to it then.

Pres. Smith—The only objection I found is, What is it going to cost me? They think it is going to, them something. If I get a letter stating that some bees are diseased, I go just as soon as I can. Then we examine all the bees in his neighborhood, as he might not be the only one in the neighborhood that has the disease among his bees. I never found any trouble when I told them it doesn't cost them anything. When they find that out they will help us all they can.

Mr. Stone—I was going to say in addition to what we learned from the talk of our foul brood inspector, that foul brood in a neighborhood might come through a man having a number of colonies, or one who has only a few bees. The man with 3 or 4 colonies that get the disease will keep it, while the man who is making a business of bee-keeping would do his best to exterminate it. The other man would keep the disease and would seed the whole neighborhood with foul brood, and therefore we need a compulsory law.

Mr. Dadant—I think Mr. Bowen is right. Go at them first with persuasion, then by force; but I don't think it will do to have the impression printed in the Report that we are not in favor of a compulsory law. I believe we ought to have the law. I think the inspector ought to be kind and considerate, and get all we can from people by kind treatment, but if he finds people objecting to have their bees inspected, he ought to have the authority to demand permission to inspect, because you may come across people who are inconsiderate in this matter, and would require force to destroy the foul brood. We don't want to give out the impression that we are not in favor of a compulsory law. We can get the law if other States can. Other States have a law about cattle, and one about Canada thistles. You can compel people to have fumigating done to guard against the spread of contagious diseases. I think we ought to have the compulsory clause. I sent our inspector to several people whose bees had foul brood, and I could have sent him to several others if it would not have taken beyond the appropriation. Even more good could have been accomplished. I have received letters from people whose bees have foul brood.

Pres. Smith—I called at those places.

Mr. Dadant—Did you mention my letter? I think more good can be done yet.

Mr. Smith—We went to look at an apiary and found 14 infected. Some were infected later, but we couldn't tell it at the time. I found three neighbors with infected bees, and left instructions to have them cleaned up and send in the bill. When I went there the last time they were all nice and clean. It would have been a great expense to go up

there myself, and I would have had to leave other places to go there. If we can enlist the services of a good bee-keeper to help us, we can cover more ground, and it will bring better results.

Mr. Bowen—I don't believe we should leave out the compulsory clause if we need it, but it seems it is not needed, and if it is not needed the Legislature is against anything compulsory, even though there are a good many things that are compulsory in the diseases of bees and animals, but the chances are that if we hadn't struck out the last clause we would have lost the whole thing. You will find the people are willing to have their bees treated, and I don't think it will be really necessary to have a compulsory law. It seems to me the money can be used to better advantage, if it goes toward getting out a good Report, advertising our honey, and advertising this Association. I believe all bee-keepers ought to be instructed about foul brood, what it is and how to treat it. Get out some small pamphlets concerning it, and send a dozen here and there to the small bee-keepers, and it will do lots of good. It would be a good idea to have pamphlets setting forth the benefits they would get if they joined the Association, and advertise the Association and help it. If I understand it rightly, this appropriation is made by the State for the bee-keepers, and this Association has the responsibility of handling the appropriation. Still, every bee-keeper in the State of Illinois is entitled to the benefits of this appropriation, if he asks for it. If enough of these reports were cloth-bound, and enough printed so that anyone who wants them can get it, it would be the proper way.

Mr. Black—If I am not mistaken the foul brood law was passed by the Legislature in March, last year. I may not be correct.

Mr. Stone—No, it passed the Senate, and was on second reading in the House, where it died because of the sudden adjournment of the legislature.

Mr. Black—I don't know just what part of the law it was, but the objectionable grounds was because it gave the inspector too much power, to simply go into anyone's premises and destroy the bees, and there was a feeling in the Legislature against it because of that provision. It is hard to get a law with the compulsory provision in it.

Mr. Baxter—This law gives us an appropriation which is in force for two years, then it will have to be renewed again. If you can't get the compulsory law, get the best you can. I think we should have the compulsory law.

Mr. Stone—The Compulsory Law passed the Senate, and got to a second reading in the House, and we were assured by the member who handled it that it would surely pass, but he was badly surprised when the session so suddenly adjourned.

Mr. Baxter—The State Veterinarian and the State Board of Health have the same authority in cases of contagious diseases, and I think we should have it in this case; it is only a question of judgment. I think the inspector of apiaries

should be an able man, and know his business just as well as the members of the State Board of Health.

Mr. Stone—We know what our inspector is doing from the orders we have to pay. In one case we were asked for an order for a man in the northern part of the State, for \$6.00 for two days' work, and in his letter he says my time spent was worth two or three times that, but I will give the balance to the cause of bee-keeping. If our inspector had been there it would have been \$8.00. Our funds are being used economically—that is the reason our Treasury is full. We ought to encourage our inspector to go into all parts of the State, and do that kind of work. Another thing as to what Mr. Johnson said. During the World's Fair, at Chicago, our appropriation for a honey exhibit was not given till late in May, and the other States had theirs in by the first of May. That put us in a pretty bad position. I had access to all crop reporters in the State—about 600—and I suggested to our Executive Committee that we send letters to those crop reporters (return postals) for names of bee-keepers, and it wasn't two weeks until we had nearly 2,000 bee-keepers' addresses in our State of Illinois, at an expense of \$12. At that expense we can again send out postal cards and get the names of bee-keepers, and send out pamphlets on foul brood, and I believe that our inspector would favor that kind of action.

Mr. Dadant—I would like to bring up the question of foul brood. My understanding is from the men that followed up the bill, that the Bee-Keepers were in favor of a Compulsory Bill. I am speaking of the progressive bee-keeper, the man who attends bee-keepers' conventions, the man who makes a business of keeping bees, not the man who keeps them in the old-fashioned way—he probably did not hear of the bill. My understanding is that the man who helped with the Bill and was disappointed when it failed to pass, was of the opinion that if the time had not been cut short, it would have gone through. I think at the next session it will be passed. I don't believe in putting an arbitrary man in the office in any case, it would not be fair; but take the just and good man, and it is necessary that he should be backed with authority in case he should come across a man who refused to have his bees examined. Therefore, I believe it worth while to have the compulsory law. After the law is passed, if they have an appropriation again, I think it would be advisable to put them together. The compulsory law regarding foul brood ought to be drawn up and put before the Legislature again, and I think the time is coming when we will succeed with it.

Mr. Stone—I want to say that they wouldn't put them together. The Bill on the 14th page of the last Report we had to divide. (See Report of Legislative Committee.)

Mr. Black—I think we should have a compulsory law. The foul brood law in Missouri had a strong pressure brought upon the Governor to sign it, and, from the information I have received, I understand that Missouri has a no compulsory law.

Mr. Johnson—Do I understand you right, that the compulsory part of this law, the way it was put, would become a statute separate from the rest, and be a permanent law? If we lose the compulsory part we might lose the other, if one and the same bill. I think Illinois should have as good a law as Missouri. They might favor one part even if they didn't favor the other.

Mr. Stone—We were pleased when they were divided—the one to be a permanent law—thought the appropriation was safe, but as a whole we were not so sure.

Mr. Johnson—They failed to pass the compulsory part, and passed the other.

Mr. Stone—They rejected two sections in one and put in another Bill instead, and the member who handled it in the House (our representative from Morgan County) advised us to get a different Bill to take the place of that, and we proceeded as we have already stated in our Legislative Committee report.

Mr. Johnson—This is a different bill, then?

Mr. Stone—Yes, this is the bill that the Committee just named—had drafted by the Attorney-General at the dictation of the Governor, and was just as near what we wanted as we could get them to consent to put before the Legislature. We will have it in our Fifth Annual Report.

Mr. Crim—In my township I found there were 30 of the bee-keepers who belong to this Association, 15 of them take a bee-paper, who do not belong. There are 2 in particular that don't care what is going on—they don't take the paper nor belong to an association. It is for this reason that I am in favor of a compulsory law.

Mr. Dadant—I don't know but it seems to me I heard someone say there was no disease among the bees of the progressive bee-keeper. It seems to me I heard some such statement.

Mr. Johnson—The progressive bee-keeper is very likely responsible for the disease, by bringing it in in the first place.

Mr. Dadant—There are times when the disease will start in some locality, and the bee-keepers won't know about it. The people are judged by the bee-keeper who takes care of his bees. The progressive man gets rid of the disease, while the other man does not notice it till he finds his colonies in a rotting condition. The progressive bee-keeper will get the blame, while the other man will care nothing about it, and the disease will spread all over the neighborhood. It is just the same as in human diseases—if it is not checked it will spread all over the neighborhood. You find more cases of disease in a city than in a small town. In Colorado and California where there are a great number of bees it will spread more rapidly—it is like a fire.

DO BEES PUNCTURE GRAPES?

Mr. Stone—The next question is: "Is it possible for bees to puncture grapes?" This is an old—and settled question—but someone wants it answered.

Mr. Crim—The reason I asked that question is because I have been complained to by many people saying that my bees destroyed the grapes. I told them it was impossible—they had never caught them doing it, but still they thought (?) they did.

Mr. Stone—Mr. Dadant has probably heard them talk that way. I have heard him answer that question in the State Horticultural Society.

Mr. Crim—An old lady told me, "Those bees of yours are destroying my peaches, and I found one peach filled up with honey." I told her she would have prepared peaches and honey then.

Mr. Stone—We want Mr. Dadant to answer that question.

Mr. Dadant—We have had a great many complaints in regard to this matter. We had a vineyard ourselves, but our neighbors wouldn't listen. We had neighbors who had half an acre, and in 1879—one of the worst seasons for bees I ever remember—we really thought our neighbors were to be our enemies. Every neighbor who had grapes said, "Dadant is getting rich off our grapes; his bees are making honey from them." They got up a meeting, and wanted to get a law passed preventing people keeping more than 20 colonies of bees. We were feeding our bees at the time. When we took the grapes out of the wagon I noticed a bunch of bees on the board. I wondered what was there, and I found three dead bees on that bunch of grapes. There was a small depression made in one of the grapes, but there was no harm done to that bunch of grapes. The next experiment was to put bunches of grapes in different hives of bees. We left them 3 or 4 weeks. In some cases when we examined them we found the bunch covered with propolis, as they cover anything that gets in their way—but all the grapes were perfect. A year or two later I had an experience with a lady; she said, "Your bees are eating my grapes." I told her it was a mistake, and showed her it was no easier for a bee to puncture a grape than it would be for me to bite into the flat surface of a board, because the tongue or lips of the bee could not grasp the skin of the grape. She had seen the bees on the grapes and thought it was the bees that were puncturing them. We made the experiment; put some sound fruit in the hive, and let them work on it, but they could not puncture it. Show the people that it is a mistake. You can't go into the vineyard after sunrise but what you can see bees on the grapes and on the peaches. If you go daily you will see that it is the birds that do the damage.

Mr. Crim—I found out to my satisfaction that it is the mashed fruit the bees go for.

Mr. Black—The worst bird is the oriole.

Mr. Stone—I am afraid you are mistaken in that. The greatest puncturer of grapes I have ever found is the wasp. I have seen bees following them to get the first suck—after the wasp had done the puncturing.

Mr. Baxter—I have been watching the birds, and I can say that the Baltimore oriole and the robin are the two worst

birds we have. We catch the sparrows lots of times, but the Baltimore oriole and the robin cleaned out my vineyard, and didn't leave a thing—not a berry left. I caught about a hundred at it at one day, and couldn't find my gun. I asked my boy about it and he had broken it and hid it.

Mr. Stone—I want to defend that oriole, for it is one of the prettiest birds we have, if you mean the black and yellow kind. Is that the Baltimore oriole? I never caught that bird going in groups, and that is the way they go after fruit.

Mr. Black—They go singly, alone; that is the oriole.

Mr. Stone—I will quote what Assistant Ornithologist at Washington—F. E. L. Beal, B. S., says about the Baltimore oriole:

“Brilliancy of plumage, sweetness of song, and food habits to which no exception can be taken, are some of the striking characteristics of the Baltimore oriole. In summer this species is found throughout the northern half of the United States, east of the Great Plains, and is welcomed and loved in every country home in that broad land. In the Northern States it arrives rather late, and is usually first seen, or heard, foraging amidst the early bloom of the apple-trees, where it searches for caterpillars, or feeds daintily on the surplus blossoms. Its nest commands hardly less admiration than the beauty of its plumage or the excellence of its song. Hanging from the tip of the outermost bough of the stately elm, it is almost inaccessible, and so strongly fastened as to bid defiance to the elements.

“By watching an oriole which has a nest, one may see it searching among the smaller branches of some neighboring tree, carefully examining each leaf for caterpillars, and occasionally trilling a few notes to its mate. Observation both in the field and laboratory shows that caterpillars constitute the largest item of its fare; for in 113 stomachs they formed 34 percent of the food, and are often in varying quantities during all the months in which the bird remains in this country, although the fewest are eaten in July, when a little fruit is also taken. The other insects consist of beetles, bugs, ants, wasps, grasshoppers, and some spiders. The beetles are principally click beetles, the larvæ of which are among the most destructive known; and the bugs include plant and bark lice, both very harmful, but so small and obscure as to be passed over unnoticed by most birds. Ants are eaten mostly in spring, grasshoppers in July and August, and wasps and spiders with considerable regularity throughout the season.

“Vegetable matter amounts to only a little more than 16 percent of the food during the bird's stay in the United States, so that the possibility of the oriole doing much damage to crops is very limited. The bird has been accused of eating peas to a considerable extent, but remains of peas were found in only two stomachs. One writer says they damage grapes, but none were found. In fact, a few blackberries and cherries comprised the only cultivated fruit detected in the stomachs, the remainder of the vegetable food being wild fruit and a few miscellaneous seeds.”

Mr. Miller—There are two species of oriole; some have lots of yellow, and some have not.

Mr. Stone—The yellow oriole is the one accused of doing the damage to the grapes, and I venture to say that if you will look carefully when you see the oriole at your grapes you may discover it is after the wasps that come to the grapes.

Mr. Miller—I would like to ask if there are not certain seasons in the year when the grape will crack of itself.

Mr. Stone—I had nearly 100 colonies of bees and I had only 6 grapevines at that time; they were loaded with grapes. That was during my early experience, and I thought the bees could eat the grapes right up. I had always believed they could puncture grapes. We were anticipating a visit to my wife's old home, to be gone 3 or 4 days. I said, "Before we get back the bees will have all the grapes eaten." My wife said, "We can't do anything with them now," so we let them alone, and when we got back I went to see if there were any grapes left. I found that but a very few were gone. If the bees could have eaten those grapes they would have eaten the last one, for they were getting no honey at all. Very early in the morning I saw a robin. I went out and shot 3 robins, and I never saw another bee at the grapes. It is not a bird's nature to eat fruit. I noticed one year the birds were not eating cherries. We had quantities to sell, and in going over the pasture one morning, I made the remark about the number of millers that were flying ahead of us—they were as thick as grasshoppers. In the afternoon I was picking cherries, and we had been wondering why the cherries were so ripe and no birds after them. Below me, in the forks of the tree was a robin's nest, and it contained young birds. Every once in a while I would see the mother robin come to the nest with her mouth full of millers; there were a very few seeds in the bird's nest, and not a cherry to be seen on the tree that was bird-pecked, but that robin made a visit about every 3 minutes to that nest with her mouth full of millers. I made up my mind right there that I would never kill another bird, except crows and sparrows, and I am now about to make terms of peace with the latter.

Mr. Baxter—Birds are like the human race, they have to be educated to what they eat. Now at home they have their taste educated for fruit; they take everything, not only grapes, but even the strawberries, raspberries, cherries, and even the apples. You will find a robin with an apple partly eaten, and I said, "I will kill every bird I catch at the work."

Mr. Stone—Mr. Baxter, they are only doing that because of necessity. Your bees don't go to the grapes when there is plenty of honey; they eat the fruit because there is nothing else. The same with birds; if they can get millers to eat they won't touch the fruit; and if we kill all the birds, our fruit-trees and all will be destroyed by worms and insects.

Mr. Black—I have a large patch of raspberries; when the birds find them I get less than half a crop; the same way with cherries.

Mr. Stone—Necessity. When our pasture fails we have to feed our stock something till it comes again. So with the birds when their crop of insects is all destroyed, and our fruit crop saved, for shame if we can't spare the dear birds a small portion of it. Thus far we have had fine fruit without spraying, and we give the birds their share of the praise for it, and we are friends to all of them but crows; they kill other young birds.

Mr. Black—It is a necessity for me to have the cherries, as well as the birds.

Mr. Johnson—I suggest we come back to the question of the foul brood inspection of bees.

AGAIN THE DISPOSITION OF THE APPROPRIATION.

Mr. Stone—The next question is, "What we shall do with our money?"—meaning the appropriation.

Mr. Johnson—I suggest that we print more copies of the Report, and every member of this Association be entitled to a cloth-bound copy.

Mr. Dadant—I think the motion should be made to instruct the Secretary to have as many of the cloth-bound copies printed as will be needed for the members of this Association, and there should be left enough to send to other societies.

Mr. Johnson—I believe if every member of this Association gets a cloth-bound Report there will be a great many more members.

Mr. Baxter—This should be applied to all members.

Mr. Stone—Our cloth-bound Reports are about 30 cents a piece for the cost-price, and for members paying 25 cents. It is for this Association to vote whether it is best to have the cloth-bound, and have some to send to other societies.

Mr. Johnson—When we come into this Association as a body we only get the rate the first year; after that we have to pay our dollar.

Mr. Stone—If you come in through the other Association you can come every year for 25 cents.

Mr. Smith—They drop out again if they don't pay, as the fee is annual.

Mr. Johnson—It is not so much what we pay into the Association, it is public. This appropriation, by the State, the tax-payers pay for it; it is customary, and right and proper, and just and honest, that every bee-keeper be entitled to the benefit of this Association, therefore it will be proper to send every bee-keeper a cloth-bound Report, whether they are members or not, but especially those who intend becoming members, they ought to have one, the same as those now belonging. I understand there are smaller associations in this State; it would be a good thing to have as many as possible in the State, and have them join this Association. We ought to encourage it; it will do more good, and the inspector can visit these local associations and instruct the bee-keepers, and educate the people so they will be on their guard against foul brood and can cure it if their

bees get it. This Association should do all it can for the smaller societies, and help them on. I think it would increase the membership of this Association. It will induce bee-keepers to become members of both Associations, all should be treated as nearly alike as possible.

Pres. Smith—They are now all treated alike. Those joining this Association through other associations, get the Report, and have the same rights as regular members.

Mr. Baxter—Can those outside of the State become members of this Association?

Pres. Smith—A good many members of the Chicago Northwestern joined, that live in Wisconsin.

Mr. Baxter—I don't believe it will be right.

Mr. Bowen—I doubt if you could send the Report outside of the State.

Mr. Baxter—If they join this Association they will be entitled to it.

Mr. Dadant—These members belong to an Association within the State—it meets in Chicago; what if they do get our Report, there will be only a few of them outside the State. I don't think it will be worth while to consider it. Those that join from the other association ought to be entitled to a Report, but our appropriation is given to us by the State, and we ought to remember it, and use it exclusively in the State. Don't send the Reports to people who will throw them away—but don't throw them in the basement of the State House. Try to help the people who will appreciate them. The man that is interested in his bees is interested enough to read the Reports. The man who is proud of his bees is the man we want in our Association. We want to have our Association at Springfield. It is all right to give outside of the State if you are sure to have enough to give in the State. Let me give you an instance: I belong to what is called the Mississippi River Improvement Association. We want to improve the Mississippi River. We printed 500 maps of the upper Mississippi and sent them to the members. They for no one else and how would we know it if some one else did want them?

Mr. Johnson—There is something I want to bring up, and I don't believe any time will be lost in discussing it; that is, the advantages of Springfield. I have been in Chicago, Kansas City, and St. Louis, but never in Springfield before; this is a good place to get people to come to see the sights. This is the first time I ever saw the State House, and there are so many things to see that it will be a great inducement for people to come to this convention. Whenever there is a convention held at Washington, many people will attend to see the sights and scenes they have read about. So will they be paid in coming here.

Mr. Black—What was the question before the house?

Mr. Stone—The motion had a second. I was going to second it, and some one else did.

Mr. Johnson—I suggested we word it a little differently.

Pres. Smith—Are you ready for the question? All in

the Secretary be instructed to get out sufficient cloth-bound Reports to supply the members of this Association.

Mr. Stone—I take it this means the Executive Committee, which includes the President, Secretary and Treasurer.

Pres. Smith—Are you ready for the question?? All in favor signify saying Aye. (Motion carried.)

Mr. Johnson—And one thing more: The small pamphlets can be given to people; in different localities there are many bee-keepers that don't like to have the inspector come and look at his bees. If he would read a pamphlet on the subject he wouldn't be so hard to convince.

Pres. Smith—There are pamphlets on the subject.

Mr. Johnson—I think the small bee-keepers we should approach very carefully about foul brood, and educate him, and let him know that if the disease gets among his bees the honey is not dangerous. We are likely to give out the impression that the honey is dangerous, and we ought to have it stated in the pamphlet, telling them that foul brood honey is no more dangerous than the bread they eat. People have the impression that anything with a germ in it is going to kill some one; most of the germs are for our benefit. And I believe that people are likely to get the impression that the honey is dangerous to eat. I suggest that we get out pamphlets written up in good shape—something that we can depend upon.

Mr. Dadant—This Report has quite a statement in regard to foul brood, and I believe it is better to have the same this year. There are so many pamphlets flying around loose that very few people read them. If you have it in a book everyone wants it, for they will last a long time. This was done without suggestion on the part of the members, was it not, Mr. Secretary?

Mr. Stone—We put in just such things as we think are education along the line of bee-keeping.

Mr. Dadant—I suggest we have a good deal inserted concerning foul brood. I don't like the idea of the pamphlets; I would like to see it in a book.

Mr. Johnson—I had at one time quite a library—part of it is now in Kansas, part in Illinois, and I made a rule that people couldn't borrow my books. But we want the pamphlets to go to the small bee-keeper. We don't want to lend them our Report, for they will keep it. A pamphlet is inexpensive, and we can instruct the bee-keepers about the foul brood law, and they will instruct their neighbors.

Mr. Miller—While we are endeavoring to send out literature for the welfare of the bee-keepers and the suppression of foul brood, would it not be well to put in something that will be an inducement for the greater consumption of honey, such as the food value of honey, etc. I suggest we send to the general public a pamphlet along with this foul brood business, something of honey as a food; it will lead to an extension of the consumption of honey. If you have the honey, and no sale for it, it is not worth so much to us. Something is needed to induce the people to use more honey.

This is a subject that has been talked about a good deal by our society, to induce people to use more honey; some pamphlet on this subject would be good to send out with our foul brood instructions, I think.

Mr. Stone—I am thinking of the different things that have transpired. I am ready to say that I believe that these little pamphlets would be of more use in the hands of our inspector than any one else. A bee-keeper told one of the representatives he didn't give a cent about having the foul brood law passed; what good would it do in his hands? If we had ten thousand they wouldn't do as much good as in the hands of our inspector. If we get literature that doesn't interest us immediately, we are likely to lay it aside and forget it. That is my opinion.

Pres. Smith—I hold in my hand here a small pamphlet, "Foul-Brood. Its Nature, History, and Treatment." If the people read it, it induces them to keep the law.

Mr. Bowen—The best way to get this information on foul brood to the bee-keepers, I believe, is the small pamphlet. I am in favor of it, because you can get it out at less expense. It is an easy matter to educate any intelligent person on almost any subject, but the ignorant ones are the ones we are troubled to reach. I have been in the country a good deal at different times, and on different business, and I was surprised to find some of what we call our best farmers would have no reading matter around the place. Now, how are you going to reach that kind of people, who own perhaps 10 or 12 colonies of bees? They will get foul brood fully as quick, if not quicker than any one else. How are you going to reach them? You say, "By the State inspector." You should try to get them to read these pamphlets. If they look it over carefully they will be able to recognize it when they have it. It is too expensive to send out the large Report. If they read the pamphlet they will send for the large Report. You can't get too much information before the bee-keepers. The question is, how we can send it out, and at what expense? We must be careful how we use the State fund. I had some work asking our representative to get this passed at the last session; they were ignorant about the subject. I explained the best I could about foul brood, and what we wanted to accomplish with this appropriation. Now we have the appropriation, we want to divide it equally, and interest the bee-keepers. You must reach every locality with some one you can trust. There are something over 30,000 bee-keepers in the State, and probably only about one-tenth will pay any attention to it unless their attention is called to it. I want to make a motion. I move the Executive Committee be instructed to have published 1,000 copies of the Report, and that the Secretary include the National Report, and that we have 5,000 pamphlets printed on foul brood, and the Secretary is to deliver them to the inspector, and every member of the Association is to receive 15 or 20. I want just as many as I can use in our locality.

Mr. Johnson—I would like to suggest that the Executive Committee be instructed to print as many of these circu-

lars as they think sufficient, and that they distribute them in the way they think proper.

Mr. Becker—Then I move instead of printing 2,000, print 1,000.

Pres. Smith—Is there a second to that motion?

Mr. Stone—I second Mr. Becker's motion for I think 1,000 copies will be enough.

Mr. Dadant—I think the Executive Committee ought to have the option in what is needed as to printing, binding, etc. We ought to allow a little to the judgment of our Executive Committee; they will not squander the money; they ought to be the judges as to the quantity of pamphlets and books.

Mr. Stone—I thank you for that suggestion, if I am to be one of the Committee.

Mr. Johnson—The Executive Committee are better posted as to what is needed. The rest don't know about it. The Executive Committee can do as they see fit, because they will be the ones to do it.

Mr. Dadant—I would offer as a substitute to Mr. Becker's motion, that the Executive Committee be instructed to print the books, to insert into them a report on foul brood, and to print also a pamphlet on the treatment of foul brood, in the quantity they believe necessary, and to deliver them to members of the Association who they think will be able to use them.

Mr. Black—I second the motion.

Pres. Smith—All in favor, signify by saying Aye. (Motion carried.)

Mr. Baxter—Are these to be cloth-bound, or the other kind?

Pres. Smith—They are to be cloth-bound, enough for the members, the balance in paper.

On motion of Mr. Becker, the meeting adjourned till tomorrow morning.

SECOND DAY—MORNING SESSION.

Pres. Smith—There are two of the members who have to leave before noon. Can we not elect officers while they are all present, then finish up the other business?

Mr. Stone—I don't know; the regular time is the afternoon of the second day. We need a vote of the meeting to do so.

Pres. Smith—It comes next on the program.

On motion of Mr. Dadant the convention proceeded to elect officers. (See front part of the Report.)

Pres. Smith—I think it would be a good idea to send out postal cards to all members that are delinquent, telling them of their delinquency, and asking them to pay their dues for the coming year. The National and the Chicago Northwestern do that.

Mr. Stone—We have done that for two years and we want to repeat it this year. We send out a circular letter with blank for return fees.

Mr. Black—We sent out a letter asking them to become members of this Association, and it increased our membership 4 times, and paid our expenses 10 times. Our membership is 94 this year; that of the Chicago-Northwestern is 82. We have the largest bee-keepers' association in the United States, except the National.

Mr. Dadant—One thing I want to suggest before the meeting: We are supposed to give half of what comes to us to the National; any members who have paid, it is necessary we should give to the National half. I paid my membership to the National, \$1.00.

Mr. Johnson—They always give me another year, so I was two years ahead. I suggest that circulars be sent bee-keepers stating the benefits of joining this Association; it will result in a lot of members.

Mr. Bowen—After the election probably it will be in order to bring up the salary of the officers. I understand the Secretary is only getting \$25 a year; he spends his time up here at Springfield in the Legislature, and does lots of writing, and the Association is getting larger, and he gets more work. I think the salary is entirely too small. It should have been fixed before the election because if it was a big salary one of the others might have wanted it. Last Year we gave the Secretary no salary at all—he donated his work. I put the question up last year first; while we didn't fix a large salary, we didn't think it was best to do so; we didn't think we could stand the expense, thinking we could give it to him gradually. I should be glad to see his salary made more than it is now. I hardly know what would be proper. I know he doesn't get paid for over a quarter of his time.

Pres. Smith—A motion to that effect will be in order.

Mr. Bowen—It must be from the general fund; what part of the general fund have you on hand now?

Mr. Stone—\$92 and some cents.

Mr. Johnson—I think the salary should be more than it is now.

Mr. Bowen—He got \$25 this year. I think it ought to be double. I move that the salary of the Secretary be \$50 for the coming year.

Mr. Poindexter—I second that motion.

Pres. Smith—It is moved and seconded that the pay of the Secretary be raised to \$50 per annum. Are you ready for the question? (Carried).

Mr. Johnson—I think it would be a good idea for the Secretary to be a delegate to the National convention. This Association ought to send a Delegate to the National every year, I think, and in that case it will be necessary that his expenses are paid.

Mr. Dadant—I think that is customary in a good many associations, to pay just the traveling expenses. Some prefer a better hotel than others. I think just the railroad fare should be paid.

Pres. Smith—Was there a second to that?

Mr. Black—Yes, sir.

Pres. Smith—It has been moved and seconded that this

Association pay the railroad fare to the National convention for the delegate.

Mr. Black—I thought about going to the National convention this year; if not the National, to the Chicago-Northwestern, just for the reason of increasing our membership, and I think the President and Secretary who attended it last year did the Association a good deal of good, and I believe it will be a good plan for us to send another delegate. Send the Secretary, and send another one also. The State Horticultural Society and the State Farmers' Institute, and our County Farmers' Institute, all pay their delegates' expenses that come to the convention; if they put them on the program they pay all expenses.

Mr. Johnson—Do I understand there is a motion before the house, to elect a delegate to the convention and pay railroad fare?

Pres. Smith—We are deciding it now.

Mr. Johnson—I believe one delegate from this convention would be sufficient. The Secretary has it. He understands the clerical work of the Association, and I believe he would make a good representative, and I believe his railroad expenses should be paid; further than that, I would not make any more expense to the Association. I favor Mr. Dadant's motion.

Pres. Smith—Are you ready for the question? All in favor say Aye. (Carried). That is, this Association pays the railroad fare of the delegate, and that the Secretary be the representative.

Mr. Dadant—In this matter of the National Association, the Directors have been re-elected too much. I was a Director twice. I think it is better to have a change. Illinois used to have two Directors; it has one now. Probably this is to be regretted. It is easy to get into the habit of nominating the same parties. I believe it is a good thing to change, but I don't think you should change every year. It is like putting a postmaster in office because he is a poor man. Now there is a good deal against that, because he is a poor man he may not be fitted for the place. Be careful when changing to put in a suitable man.

Mr. Johnson—I think it will not be long till we get the Director on the Board again.

Mr. Bowen—Illinois has a good opportunity to secure the Presidency of the National Association. I don't think it will be advisable to bring up the matter of Director.

Pres. Smith—I think the majority of the votes have been sent in by this time. I know I filled out my list last week and sent it. While we are electing the officers we ought to pass to the Inspector.

Mr. Stone—I believe we ought to. I was about to suggest it when Mr. Bowen spoke about the Secretary's salary. I was going to suggest that while we were in the business of electing officers we ought to elect the State Inspector for the year beginning next July. I suggest we take up the question.

Mr. Dadant—I wish to say to the convention that our

President has attended to the matter in such an honorable manner, we ought to re-elect him. We couldn't elect a better man. He has been economical. Therefore I move that Mr. J. Q. Smith be elected Foul Brood Inspector.

Mr. Stone—I second the motion.

Mr. Black—There is a motion that Mr. J. Q. Smith be appointed Foul Brood Inspector. All in favor say Aye. (Carried.)

Pres. Smith—I thank you for the honor. At the same time I want to say that it means considerable sacrifice on my part; it costs me about \$2.00 a day to take care of my business at home. As it is for the good of the bee-keepers in the State, I will serve and do my best for the cause. I hold the appropriation as a matter of trust. It belongs to the people, and I find it possible to save money by finding capable men to do the work; if I can I do it that way. I think next year we should appoint deputies in different parts of the State, for the railroad fare is a big expense. I try to do the best I can for the benefit of the bee-keepers.

Mr. Bowen—We are taking up a good deal of time without getting very much report, and we ought to have a good report. Are there any papers to be read? I think this election business should be cleaned up, and we should take up the question-box.

Mr. Dadant—There is one thing I wish to say. The Secretary has made the suggestion that we do as other societies do, in regard to the program, i. e., pay the expenses of some members to take a place on the program. He says that the expenses of Dr. Miller and Mr. York were paid by the Association. I know by experience that it is a good thing to have some prominent names on the program. I move that the Secretary be authorized to pay such railroad fare as he deems necessary to make a good program.

Mr. Black—I second that motion.

Pres. Smith—Are you ready for the question? All in favor signify by saying Aye. (Carried.)

Mr. Becker—There are a number of parties living near Springfield that have desired to attend the convention with me; I am sorry to say that neither of them are present. They didn't get the postal cards and consequently they forgot the date. Last year at the Chicago-Northwestern, in Chicago, they expended considerable money in sending out postal cards to bee-keepers far and near, even to Sangamon County, and I believe they spent \$24. I suggested the matter to our Secretary some time ago, and I believe if we send out about 600 postal cards, and have them printed stating that the Illinois Bee-Keepers' Association will meet at a certain date, and requesting their presence, I believe we can get the money back in members several times over, and I think it will be money well expended. If satisfactory, I suggest we instruct the Secretary to do so.

Pres. Smith—I think the Executive Committee will take this up.

Mr. Johnson—I suggest we talk about bees. This report will not be valuable unless we talk on the subject of bees.

Mr. Stone—We want to get on that, but we want this question settled. In regard to what Mr. Becker suggested about sending out notices of our meetings. We send out over 200 every year. We send them to those we wish to become members of this Association. The members of the other Associations get our Annual Report, and they will get notices of the meeting. They are notified of everything that takes place in the Illinois State Bee-Keepers' Association. We increase our membership that way wonderfully. We started with 25 or 30 members, and now we have 100; including the Chicago-Northwestern we have nearly 200. If we don't get 200 or 300 to attend here (our members don't all attend), they won't come because they expect these Reports of the meeting, notwithstanding they don't consider that if they don't come, nothing will be said to make the Report. You can't get more than just the usual number to come and do the talking, and then we have good meetings and exchange ideas, but of course the more that come the better.

Mr. Black—Did you send notices to the papers?

Mr. Stone—Yes, I sent notices to all the papers.

Mr. Dadant—As I understand it, the Treasurer would like to have you send out postal cards asking for addresses of bee-keepers. If necessary we might pass a motion to that effect. It seems to me, as long as you have a right to expend the money for postage, that if the convention desires to have this done, send cards to the members for addresses of bee-keepers, you can do it on your own responsibility.

Mr. Bowen—It is the Executive Committee's duty to do this, whether they are instructed or not. They can use their own judgment. That is why they are elected.

Mr. Stone—If you want to leave it to the Executive Committee it will be done. It will take \$12 to send out return postals. We tried it during the World's Fair at Chicago, and we spent \$12 and received nearly 2,000 names of bee-keepers.

Mr. Dadant—You can get fresh names, can't you. We want a new list, not an old one.

Mr. Stone—We need a new list.

Mr. Bowen—It is mentioned by Mr. Becker that the Chicago-Northwestern send out cards, etc. I think of one I found in Western Illinois, that even though the members took the bee-papers, and saw the notice where the convention was to meet, we advertised the convention in the paper, and they didn't see it then, and we found it necessary to write postal cards or letters to every member about a week before the Association met.

Mr. Johnson—The matter of sending out postal cards I think is a good idea, as that will be likely to get the names. I think in that way you can get more good done than sending out cards to a man here and there. Those that have lists of bee-keepers let *them* send them to the Secretary.

Mr. Dadant—It is more expensive to do that. You would find that many of the cards would go to the same parties. If the Secretary gets the names he can send to each party. Therefore, I am in favor of leaving the action to the Execu-

tive Committee, so that there will be no double action—no two cards sent to one man; it will save money.

Mr. Bowen—It wouldn't make any difference if a man gets 2 or 3 notices.

Mr. Poindexter—In speaking about increasing the membership of this Association, I think it would be advisable to adopt the same rule as other State organizations, and move around in different parts of the State. Other State association.) If not, we forfeit our Charter.

Mr. Stone—I suppose we can hold as many meetings as we like throughout the State, but the annual meeting for the election of officers must be at Springfield, in the County of Sangamon, and State of Illinois. (See Articles of Incorporation). If not, we forfeit our Charter.

Pres. Smith—A bee keeper of East St. Louis wrote me there were bees in East St. Louis that were infected with foul brood, and wanted me to come down and do something with them. I told him I couldn't do anything more than he could. It was late in the season—too late to transfer the bees for treatment. They were sold to a widow and the widow died, and they were advertised for sale and were sold then to a certain party, knowing them diseased, and the party had paid a deposit on them, but a friend of this party sent to him, saying, those bees are diseased, so he writes to Mr. Offgate to come and examine them, which he did, and found them to be in a bad condition, so the party refused to take them and Mr. F. paid the money back. Then Mr. — wrote to me to come and do something. I couldn't just then, and on account of the lateness of the season, I told him it was best for him and the other bee-keepers to notify the public that the bees were diseased, and not to dispose of the honey at a minimum price and that this Association would if they could not, sell the hives if they were cleaned up. I would try to reimburse them for what they were out for their work. The bees were sold and they bought them. There is a neighbor of Mr. F. now in the business, tells me he knows his bees are diseased, because there was an apiary of 13 colonies on a line fence near his farm, and he said they are all diseased. Mr. F. went there and took the brood-combs out to fix up for nuclei; shook them out, and a certain man said he sold \$200 worth of bees that were infected. Now, what can we do in such cases without a compulsory law for our defense?

Mr. Becker—Mr. Smith inspected in East St. Louis, in Madison and St. Clair Counties, inspected 300 or 400 colonies in East St. Louis, and there was no foul brood except one case outside of East St. Louis. I found these people that he spoke about as soon as I got to East St. Louis. They wanted to know if he had been to Mr. M's. One of the parties sent word that he was not at home, but his son was home, and for me to inspect the bees. I went at it the first place, one of the first colonies I examined I saw the condition of the combs and saw they had foul brood. They were all diseased. I went to the other party. He had about 25 colonies and they were all in the same condition, getting considerable honey in the month of September; so the next day I went over to M's.

I went to him and the bees were in the yard, and when I stood within 20 feet of them I could smell them. I said, "Yes, you have foul brood." "But these bees are to be sold on the following Wednesday." We examined about 25 colonies. I wanted to know if he wanted to look at all of them. I don't think there was one colony but what had the disease, and some of them were so rotten that we could smell them away off. All of these parties in St. Louis told me of the sale. Some of them wanted to buy the bees, but thought it was too late in the season. They told me it was a regular hot-bed of foul brood in that county, and had been for years, and they could do nothing with it. F. told me that 3 or 4 parties from St. Louis wanted to buy the bees, and intended to destroy them in order to get rid of the disease, and I told him I thought it was the best thing to do. After I returned I received a letter from the parties Mr. Smith spoke about. Some of the colonies had a large amount of finished sections in them. One was to take the bees and the other to take the honey, and I don't know what they did with the hives, but it was the worst lot of bees I ever saw, in any case, and they were working at the time. It was southeast of St. Louis, away out from St. Louis, no house near, and the country was full of Spanish needle at the time, and they were working on it heavily. I saw an old man near by, who said, "You want to go to East St. Louis and examine the bees there." I told him I had been to East St. Louis.

Mr. Black—How long after the foul brood infection before the colonies die with it? and do they store any considerable amount of surplus honey after it is infected?

Pres. Smith—The young bees will store as long as they are active, and there are cases where colonies have lived several years after being infected with foul brood. It seems it infects one side of the hive, and the queen will go on the other side and rear brood, and then by the time that brood gets infected the bees go back and start again, and there are always a few that will hang out till they die in winter, or get robbed by other bees.

Mr. Black—Then after the colonies have died out these will infect the neighborhood. Seasons are different. The past season I never saw its equal—so much old comb. I never saw anything like it, and old foul brood comb could infect the whole place.

Mr. Johnson—We had a case come up in the Western Illinois Association that might be valuable to give. Mr. Reynolds, who lives about 23 miles from where I live, about 20 or 25 years ago got foul brood among his bees, and he had at that time a large number of bees, and they were cleaned out entirely. He was without bees for 10 years, and he had his hives standing there, and 3 years ago there were 26 swarms came there and settled in those hives, after they had stood there for 10 years, and he saw no foul brood that year. It all began the next year. It seems there was some live germs in the hives. During the 10 years the disease might have been running around the neighborhood, and maybe his bees got it from the neighbors. This is the

question: S. W. Wineteer living within 2 miles of me, has had bees there for 30 years, and I have had bees about 22 or 23 years, and there are a good many bee-keepers near me, and while this foul brood has been within 23 miles of our locality, for 20 years it didn't get into our locality; it afterwards got there.

Mr. Dadant—I have kept bees for years, ever since I was 20 years old, and never had a case of foul brood. I thought the disease worse than it is, but when I traveled I found that it was more readily cured than I had imagined. I visited a bee-keeper in Colorado who had 600 colonies and he had had foul brood in every one of his apiaries, and had stopped it. He still had one doubtful colony. We went to it and found 3 dead larvæ, on new combs. He told me he would again treat it in spring. I visited another bee-keeper who said to me, "Do you want to see foul brood?" He went into his bee-house, and from a pile of brood-combs he pulled out 2 or 3 that had the dried scales of foul brood at the bottom of the cells, lying there as if it had been so much thick broth that had dried out. Said he: "When a bee-keeper has had foul brood in his apiary he can never be sure that he has got entirely rid of it." I thought that he was right, if it was handled with as little fear of contagion. The man who keeps contaminated combs at random in his honey-house will surely never get rid of the disease.

From all reports, the McEvoy treatment will succeed, but the combs containing diseased brood should be boiled down or burnt up. There are many cases of dead brood which is not foul brood. When I came home from Colorado, after seeing so much concerning foul brood, I had a visitor, a German bee-keeper, from St. Louis at our home, and opened several hives in our yard. In one hive I found dead brood, and my hair stood on end. I called his attention to it, but he said: "I have seen foul brood in Germany, and this does not look like foul brood." Yet I was much worried, but it was late in the season and I had to put off the cure till spring. When spring opened, I found the hive still with dead and dying brood, and then noticed that some of the dead brood dried in the cells, so that it could be shaken out. I then understood that it was not foul brood. I cured this colony by inserting into it a teaspoonful of oil of eucalyptus every 3 days on a piece of cotton, for about a month. Oil of eucalyptus is successfully used in fighting diphtheria, and if it can fight so dangerous a disease it is no wonder that it will cure pickled brood.

Foul brood has the brown coffee color, ropiness, stretching like India rubber, and the glue-spot smell. Honey is the most dangerous thing for the spread of the disease.

There seems to be a difference between the opinions and experiences of all the inspectors of foul brood, and the statements made by Cheshire, who gave the disease its scientific name of *Bacillus alvei*. Cheshire, as a result of his microscopic examinations, held that the bacillus was found in the bodies of workers, in the blood of the larvæ, and even in the spermatheca and the eggs of the queen. But he found very

few of the bacilli in the honey, and ascertained that they could not develop there. Yet the honey, from the testimony of all the inspectors, is the most efficient transmitter of the disease.

It is quite probable, in view of all this, that the honey, although unfit for the growth of the bacillus, preserves it intact and alive, and that it transmits it from the worker's stomach to the young larvæ, through the food prepared by the worker out of this honey. This question ought to be elucidated further, by additional anatomical experiments. The almost universal opinion expressed by the American foul brood inspectors, that honey is the main channel of transmission, contradicts Cheshire's conclusions on the matter.

Mr. Bowen—I suggest we take up the question-box. We have a list of questions, and few of them have been discussed.

Pres. Smith—If there are no objections we will open the question-box. Has any one questions they want to have answered?

SUPERS FOR COMB HONEY.

Mr. Poindexter—One thing I would like to hear discussed, that is in reference to a super for comb honey. I use a great many kinds of supers for comb honey. I would like to hear of the different kinds that are used. I sent for different kinds of section-holders and arrangements, but I didn't find anything that suited my idea, that I consider perfect. If anyone here has tried some good methods in that line I would like to hear from them.

Mr. Bowen—Mr. Johnson has tried a good many different kinds; his experience ought to be very valuable.

Pres. Smith—What is the best you have tried? What gave you the best results?

Mr. Poindexter—I use simply a frame that holds the sections with boards at the end—one of my own make. I had in mind one that suits me in every respect. My idea is to clamp the box together and hold all sides together so I can take it apart easily, without being nailed. That seems to be simply a box with loose boards set together; have the sections come to the surface of the box-holder. I would like a plan to hold it together so as to take it apart easily.

Mr. Johnson—I have used what I call section clamps for years, where you may use the section-holder or not, as you like. The simplest kind is to use a T-tin in the bottom under the sections, so that the sections are inclined to spread and give way. When you want to take the section out—all you have to do is clean off the sections and set it wherever you have a mind to.

Mr. Bowen—I use an empty section case—the cases that the sections come in from the factory just fit, and I take the super of honey and just run a knife around it, to loosen the wax—and then place it on top of the empty section-case, force the super down, leaving the sections all on top of the box. It is the easiest to take honey from that of any I know of—just loosen the attachments, and push the supers over the box, and the honey stays on top and supers go down.

A spring comes with the super, but I don't use it—I use wedges. The bees don't touch the super in the hive I use.

Mr. Johnson—One thing more about arrangements; I make no more frame hives at all—I just make supers. I have the shallow frame, and two sets of shallow frames for the brood-chamber. If I am after extracted honey I put on supers. If I work for comb honey I put on supers with sections in. The whole apiary is nothing but supers, and you don't have to use anything else. When I use a super for extracting I put frames of comb in the super above the brood-chambers, and they are not nearly as liable to rear brood in those frames. The lower story has nothing but honey in it. I find it the best I have ever used, and I haven't lost a single colony in one of these hives. It seems there is a separation between the two sets of frames that the queen won't cross. I leave them right there. I intend to put all my increase in that kind of a hive.

Mr. Bowen—I believe a good many will have to go home early this afternoon.

On motion of Mr. Becker the convention adjourned till afternoon.

SECOND DAY—AFTERNOON SESSION.

Pres. Smith—We will open the question-box now.

THE USE OF HONEY BOARDS.

Mr. Stone—"Do you use honey boards, and why?"

Mr. Johnson—I don't use them. Maybe someone else does.

Mr. Bowen—I used honey boards the last year, but I use them different from most people. In the first place, I cover the sections with dark-green paper to keep them from getting soiled; over that I put oilcloth, and on top of that a honey-board. When you take them off the sections are clean and free from dust.

Mr. Stone—I simply use the oilcloth.

Mr. Bowen—I always use oilcloth over the brood-chambers; that gets stained by propolis. This paper on the sections is to insure them against being stained from the propolis on the oilcloth.

Pres. Smith—That wouldn't be a honey-board proper; that would be a cover for the sections.

Mr. Bowen—I call it a honey-board. I turn it upside down, and use it on the oilcloth using it for honey-board. I suppose I may be wrong in the term honey-board, for a board lying between the brood-chamber and the honey-chamber, but this I do not use.

Pres. Smith—That would not be a honey-board, then.

Mr. Bowen—I might be incorrect in the term. The bees never touch the supers in the hive I use. Nail one of the lower absolutely waterproof, and there will be no danger of their glueing the sections and of bridging over the brood-frames; and I never use a board except this one I call the

covering or honey-board. It is really a covering for sections. I do it to hold the paper or oilcloth down to the sections, to keep the bees from getting propolis in the top of the sections.

Mr. Stone—They wouldn't eat the paper out where you put it first.

Mr. Bowen—I put the paper on top of the sections.

Mr. Stone—Wouldn't they eat the paper, then commence on the oilcloth?

Mr. Bowen—No, they didn't eat it off; it is glazed paper. You can use some paper where they can eat it, but the paper keeps the section clean.

Mr. Stone—Wouldn't it be just as well to place the oilcloth down there.

Mr. Bowen—The oil-cloth on top of the broad-chamber gets stained, then it would stain the sections, except for the paper between.

Mr. Miller—I only use it when I don't have honey-boxes on. I never produced a section of honey in my life. I raise bulk comb honey altogether. I let them fill the boxes and begin to seal it, and after sealing I put another section on. I have a box 10 inches high, and sometimes a box has 100 pounds in it before I take it off. I place boxes with little bits of white comb in the top of the boxes. I get much more honey that way, where we have a short honey crop. I use the honey-board when I haven't honey-boxes on. I can't say whether it is best or not. I hardly believe the bees should get into the chamber for wintering. They will winter better when they have a little ventilation, and I have never procured the honey with any other covering for the brood-chambers. I have the space between the honey-board and the frames, and I never put in anything else. I have solid frames with a space between every frame, with a 6-inch 3-8 weather-boarding across the frame to cover them. I use the hives 16 inches deep by 14 square. It had a honey-board on. I can't say there is any especial benefit.

Mr. Crim—I never use them, and I find no difference in using the oilcloth. I use the oilcloth on some hives, and some I don't. It is just about the same to me.

Mr. Miller—I never put the oilcloth down on the brood-frame. I have a wooden frame with three metal bars across it; it makes a space of 5-8 inch between the oilcloth and the brood-frame. That gives a bee-space—no obstruction in passing from one frame to another, and it makes proper ventilation, and no matter how cold it is, I never lose bees if they have enough to live on.

Mr. Stone—I have adopted a good deal such a plan as that myself. When I am preparing my bees for winter I don't put anything over them at all except the oilcloth. I leave a space between the frames and the oilcloth, so they can get back and forth over the frames. I believe it is better than to have it right flat down. Better to have it raised.

BEST WAY TO PREPARE BEES FOR WINTER.

Pres. Smith—My experience has been very successful. In the first place, to know that the bees have enough stores in the chamber; if not, I feed them, then I remove the supers. After the supers are removed I lay 3 or 4 corn-cobs crosswise of the brood-frames, and cover the top of the cobs with burlap; and fill the super with leaves, and a board on top of that. That is all I do till spring, when they are ready to go into the sections; if they need feeding in the spring, I turn up the burlap and feed them.

Mr. Crim—In what position, Mr. Smith, do you place your hives?

Pres. Smith—Facing southeast.

Mr. Crim—I have a long shed facing the south, and I put my bees nearly back against the fence, boarded up on the north, and then I rake the leaves and pack in behind and between them about a 6-inch space. I fix it as Mr. Smith describes, with leaves, burlap, etc., and I think it is the best way to fix the bees for the winter. Sometimes the better they are fixed the easier they freeze; sometimes something happens to them.

Mr. Bowen—On account of the separate frame I told about, I don't have to go to the trouble of hunting up corn-cobs, but otherwise I treat them just about as Mr. Crim; that is, I bank them in with leaves; then to keep the leaves from getting wet I put a covering over the bees and also back of the leaves, leaving the hives face the south. In that way I usually succeed very well; in fact, I don't lose any bees, if they have plenty of strength. I first see that they have plenty of stores to live on, and have plenty of ventilation. If the bees have a chance to cross the hive you can't get too close ventilation. They will pass over, and in cold weather will congeal on the sides of the hive. Otherwise they keep dry and come through all right.

Mr. Becker—My experience is that cellar-wintering is the best way to winter for me. A few years ago I built me a cellar under the honey-house, and got it in good shape. Last winter I wintered 65 colonies in the cellar. I aimed to put in 20 more. Out of 65 colonies I never lost one. Of 35 I left outdoors I lost just half. Now, the objection I have to outdoor wintering is this: You can't protect them. The better you protect them the warmer they keep. The first time the snow is on the ground, and the sun comes out, your bees fly out in the snow and they are cold and can't get back. In cellar wintering, if you have a good cellar you won't lose 1 out of 6 that you lost outdoors. The loss is caused by the bees flying out in the sunshine.

Mr. Miller—I block the hive-entrance with a board so the sun can't strike the hive; it will be sufficiently warm, and the bees won't come out.

Mr. Becker—The difference between wintering in the cellar is, they stay so quiet during the winter through the month of February, when it comes to the month of March they begin to get restless; they want to get out. When this

occurs then they need attention. I simply go in the evening, right after dark, and open the cellar door wide, and in the morning before daylight I close it again; that gives the bees fresh air, and they are quiet. Try to strike some warm day to take them out of the cellar, so they can have a good flight for two days in succession. I wouldn't give up cellar-wintering for any other kind of wintering.

Mr. Johnson—I try both cellar-wintering and outdoor wintering. I move 1-3 of my bees outdoors and have the other 2-3 come through in good shape. I winter 2 colonies in the cellar and the rest outdoors, and during bad, stormy weather in winter it is often the case I wished I had them all in the cellar. And in the spring, when I let them out, it seems those colonies wintered in the cellar are a great deal stronger than those outdoors, but when the honey-flow comes it is the other way. I get more from those wintered out-of-doors than from those wintered in the cellar. If the colony outdoors is well protected they won't stop rearing brood during the winter. When snow is on the ground you lose a good many, but you have in the spring a large amount of young bees; those in the cellar do not rear brood. The way I protect my bees outdoors, I have all hives facing the east, and then I cover 3 sides—north, south and west—with about 4 thicknesses of newspaper from the bottom-board to the top super, and set the cap on top of it. I find this makes a good protection for being as simple and easy as it is; you can put this paper on 20 hives in an hour, and it does not take very long to prepare them for the winter. Then I use either sticks or corncobs across the brood-frames, so that the bees have a space above so they can go above the frames, cross from one frame to another, or if a little short of honey I lay some of the sections down on the brood-frames, and leave a brood-space so they can get honey from above if not below. I had 2 or 3 colonies that were strong and had one super of shallow comb full of honey on top of the brood-comb, and the bees staid in that super, and I left them all there; it was the worst plan I ever tried. I ought to have taken the super off and not left it till it got cold. They will consume the honey in this super, and will die with the lower story full of honey. They can't get honey from below. If the bees had brought it into the brood-frames I would have had no honey above; I did that this year. In this way I gained success, still I have lost some colonies every winter. I tried putting paper on all 4 sides, and I found it was no success, because it seemed the wet would get in too much. I use either leaves above the frame or any kind of clean rags.

Mr. Miller—I am inclined to think we are tempted to tamper too much with outdoor bees in the way of feeding them. The last 10 years I find as Mr. Johnson said, they are liable to get damp, and the warmth doesn't keep them from freezing. In a heavy snowstorm the bees are scattered through the hive and are liable to freeze. I believe the ordinary protection is better than any other. Try some well-known protection and enough to keep them dry. Cellar-wintering is all right provided the cellar is dry and dark,

and has the proper temperature. I have wintered bees for 2 years in the cellar; they come out strong. I couldn't tell that there was any difference; they are stronger in the cellar than outdoors; but I am with Mr. Crim—those wintered outdoors are more hardened, and better able to start out in the spring.

Mr. Bowen—There is one idea in this matter that probably will never be straightened—according to how the honey-flow is. My honey-flow comes early in the year, although there is considerable honey from raspberries. There are lots of raspberries and blackberries in my part of the country, and I try to get the bees started getting surplus with that. The cellar colonies would probably build up, but at a convention we had at Galesburg two years ago last spring, after that hard winter when people lost so many bees, we compared notes as to how we wintered and how we succeeded. One man had 77 colonies of bees; he is a practical, up-to-date bee-keeper, and is called a champion, and he lost all but 6 out of those 77. Another man with 12 colonies of bees in 8-frame hives merely had a burlap on top of the frames, and never put any protection outside at all; he only lost 1 colony. This seems to show that no matter how we fix our bees they must have plenty of air in the winter.

Mr. Crim—I lost nearly half of my bees last winter. I think it was on account of too much ventilation. Two winters ago I got blocks and closed the entrance. I believe it is natural for bees to die when snow comes; the old bees don't live always, they will die out.

Mr. Becker—I don't think that is necessary. If the cellar is properly ventilated, a large proportion of the bees will come out in fine shape. There are some seasons when bees will die, and you can't prevent it. I am in as good a condition for spring crops as you are. My bees get anything they want in the early spring, but sometimes they will dwindle away. I don't know why they do it. I bought 10 colonies of a man; we used to buy bee-hives together. We had 65 colonies, and they had lots of honey. Two years ago this summer he had lots of crops; he sold out and moved to another place, and I sent and bought 10 and other parties bought 5 and 6 colonies. I brought my bees home the next day—a cold day. I had scarcely a loss that winter with old bees, while 5 or 6 died of those I bought, and they just dwindled away till there was nothing left of them, and had plenty of honey. It does that way, and if there are not young bees in the fall it is the old bees' time to die, and they can't live any longer, and there are no young bees to take their place. If you keep them till fruit-trees are in bloom, it is just that much better, but you can't always do it.

Mr. Poindexter—I would like to ask Mr. Becker what the trouble was. I always had success in wintering in the cellar, with two exceptions—too much water in the hive one year, and the other the hives were filled with honey; with those two exceptions I have had success for the last 32 years I have wintered in the cellar. Now, just by way of explanation, I have a good many colonies in drygoods boxes,

about 6 inches from the hives with leaves packed around it, both underneath and on the sides; dampness can escape through and leave ventilation under the covering. They wintered fine, and I was surprised at the experiment. I think the reason Mr. Johnson's bees died was on account of the cellar air; they don't fly out; they are kept in confinement too long. I think that is one cause. I was called to examine a friend's bees, where he lost a good many, and he had about 40 colonies, and they were placed among some evergreen trees, shaded all the time—never saw the sun. Before we came to the hive I told him which was dead, and which alive. He didn't know why they died; they were all in the same kind of hives. I noticed some on the northwest side where the sun could get to them sometimes, while those in the shade were cold all the time; they didn't have a chance to have a flight like the others, and whatever dampness got into the hives in this place just remained. They were dead, while those out in the sun, exposed to the wind and had sunlight, were living. But so far as cellar-wintering is concerned, I think that is a sure plan every time to have pure honey and the right temperature in the cellar—about 40 to 42 degrees is my temperature. During some of those cold winters of the last 3 years, I noticed where people were losing 20 percent of their bees, I had the best of success wintering my own bees in the cellar. I had some outdoors at the same time; I lost those during the cold winter.

Mr. Stone—Lots of them.

ANTIDOTES FOR BEE-STINGS AND OTHER POISONS.

Mr. Stone—"Will the same antidote for bee-stings avail for other poisons, such as poison ivy?" I am led to believe, from all I can find out and have tried, that poison from bee-stings and ivy can both be cured by plantain tea. Plantain grows everywhere; it is a plant people think is a weed—you all know what it is. The reason I came across this, I was always badly affected by the poison ivy. I never went into the neighborhood of it but that I could feel it. If I rode along the highway where it was, I could tell it. I couldn't work at all where poison ivy was. I read in the paper of this cure of plantain where a man described himself as being sensitive to it. I tried it.

Mr. Crim—Plantain is my remedy also.

Mr. Stone—You never were affected like I was, but this is off the question. I tried it, when my arms were swollen clear to the elbow, and I got a lot of plantain, and in the morning I put the plantain in a pint cup, cleaned it nicely, and put water over it and drank it. I had been affected for several days. You know how it feels when you are affected badly at night, you can't sleep. After drinking the tea I felt no more of it; it was all gone completely. It cured me every time. The man that recommended it said the first thing in the morning, when you get up, go and eat some of the leaves. I tried that. I can work now where the ivy is thick, and I take leaves and eat them; it is better if you drink the

tea. Well, then, I began to think along this line. We have a man working for us that has been on the farm for 15 years. He never was afraid of bees, didn't care anything about their stings, and he could work in ivy all day. I thought it was a good deal alike, and I drank the tea several times when I was stung. The last time I got stung it hurt worse than any time yet; I drank a lot of the tea and the swelling was very little.

Mr. Crim—Plaintain is a good remedy for earache.

Mr. Johnson—It seems as if Mr. Stone says that in cases of bee-stings he takes the tea internally. Don't you rub it on the bee-stings?

Mr. Stone—No, you drink the tea; get it into your blood. Get immune to the stings.

Mr. Johnson—Does it act right away?

Mr. Stone—If you have been lying awake nights from the effect of ivy, drink that, and you won't feel it by the next night.

Mr. Johnson—But if it only hurts for 15 minutes, then what?

Mr. Stone—Then you don't need to fool with anything. But if affected by poison ivy you won't talk about 15 minutes—it will be days and nights.

Mr. Johnson—I suppose a person handling bees very long, gets stung quite often. It used to bother me a lot when I was stung; it doesn't much now. The only protection I care for particularly when handling bees is to have my face protected; I don't like to get stung in the face, because it might spoil my beauty! Mr. Stone thinks he discovered the remedy for bee-stings, but a great many remedies are useful. I was taking some honey from an old-fashioned hive, so I had to use my whole forearm in lifting the combs, and my hand was covered very much with honey. I got a number of bee-stings through the honey, but not a single one of those was swollen. I got one above the honey, and that was swollen very badly. Then afterwards I began to experiment, and every time I got stung I put honey on it—that is all I do to it. It might be my remedy is like the doctor that had a remedy for cholera. There was a Dutchman taken down with the cholera, and he prescribed for him, and when he went around the next morning to see how his patient was getting along, he found him much better. He was very much elated over the effect of his medicine, and expressed himself so, when the man said he didn't take the medicine, "I just took sauer-kraut for it." The Doctor thought he had discovered by an accident the cure for cholera. Shortly afterwards another man was taken down with cholera. The Doctor prescribed sauer-kraut, and when he called again the patient was dead. He said, "A sure cure for a Dutchman; a sure death for a Yankee."

Mr. Crim—It spoils the beauty of some men, but I think it would improve the beauty of some people.

Pres. Smith—While talking about remedies, there was an old lady came to my house last fall. She was in the beeyard and a bee stung her on the cheek. I said, "That is too

bad; I will go in the house and get you some ammonia." She said, "No, I can cure it." She picked a leaf off the vegetables and chewed it, and put the saliva on the sting, saying, "That is the Illinois cure; it is a sure cure for any kind of sting or bite."

Mr. Johnson—This is an important question for some. I have to run my bee-business all alone. I have 3 daughters who would like to help me, and 2 boys that don't dare to do it. When they get stung both of their eyes swell shut; it seems they can't get used to it. I would like to have Mr. Stone give us directions how to make this tea, and how much to take. If it is a cure for bee-stings it will be valuable.

Mr. Stone—The remedy that works with ivy ought to work with bee-stings, and if you are affected with poison ivy and make this tea, and drink it, you will find it will cure it. If you try it you will be convinced it is a sure antidote for poison ivy. Fill a pint cup with leaves (plantain) then pour in boiling water to fill cup, and let it boil a few minutes. Sweeten, and drink; it will not hurt you if you have swelling from a sting, or from ivy; but if you have neither, it may make you feel a little sickish. Drink before breakfast for best effect.

Mr. Johnson—I wanted to know how to make the tea—you told that.

Mr. Stone—I have tried plantain tea only once for a sting. I was affected very badly, and I got some of that and drank it, and I didn't feel any more pain, and it did not swell. It didn't affect me like it usually does.

Mr. Crim—I have had some experience in bee-stings. About 20 years ago my son was in the pasture and saw a swarm of bees settled on the gate-post. He came and told me about it. I took a hive out there to bring them home. While getting everything ready, they got to my face, and stung me anywhere they could get a chance—they stung me scandalously—I guess I had 100 stings. I had been troubled very much with rheumatism; I had to lay off a half day then, but I haven't had the rheumatism since. I recommend it to those that have rheumatism; but some say they would rather have the rheumatism.

Mr. Stone—I once had rheumatism pretty badly in my elbow, and my arm was considerably painful. I was at work with the bees, when two of them got on my wrist (of the same arm) and left their stings pulsating. I let them stay there till they ceased to pulsate, and the result was my arm swelling was gone the pain was gone with it, and I have never rheumatism was just as bad as ever, but by the time the swelling was gone the pain was gone with it, and I have never had the rheumatism since. I sometimes get a slight twinge in my elbow, but a few bee-stings will drive it away again.

REMOVING PROPOLIS FROM HANDS.

Pres. Smith—Do you know how to remove propolis from the hand?

Mr. Crim—Yes, I can remove that easily. Glycerin will take that off.

Mr. Bowen—I find ammonia about the best thing.

Mr. Crim—That don't cost so much.

Pres. Smith—Ammonia is the best for me.

Mr. Johnson—Ammonia is the cheapest article you can get—the dry ammonia or the acid ammonia; but if you get the dry, put water on it, and you can use it. When you wash or anything else, it is good for anything, and it will take the propolis off clean. You might have to put it on several times, but it is fine.

Mr. Stone—I have seen Lava soap, advertised. I am not advertising any soap, but that doesn't compare with the "Lekko" soap made in Chicago. I got hold of that from a man picking apples for us; he asked me if I had used the Lekko soap; I washed my hands with it, and it takes off all kinds of stains.

Mr. Crim—The best way is to work hard, and the propolis will come off.

Mr. Stone—I want to offer this resolution before we go:

"WHEREAS, In view of the valuable services given in behalf of our State Association by Senator Berry, of Hancock County, in the passage of our Bills offered by him in the Senate of the last two Sessions of the General Assembly, therefore,

Resolved, That this Association tender their sincere thanks to Senator Berry for his services; and we shall continue to remember Senator Berry as the bee-keepers' friend, and thank him for his aid in the passage of our Bills in the Senate."

Mr. Becker—I move the adoption of this resolution.

Mr. Crim—I second the motion.

Mr. Bowen—Those resolutions are friendly sentiments from this Association, especially referring on the party mentioned, but I question the advisability of passing a resolution of that kind, because those three parties were all concerned in it, and to single those men out and thank them when this is to become public property, I don't believe it will be best for us. They are personal friends of mine, and I would like to see such a resolution passed, but to make it public property, I question whether it will not do more harm than good. I used my influence with him, and I confess it was decidedly hard to convince him. I stated the cases to him carefully, and then he saw the fairness of the proposition to be made about our appropriation, and while they deserve the resolution, and I would be glad to see them get it, I think in the long run it might grate a little on the feelings of the others interested in our Bills. You probably get what I mean in regard to the matter.

Mr. Stone—I hope that if anyone has feelings of that kind they will express them.

Mr. Bowen—It gives the impression of a tip. You will find the porters in the hotels don't want that kind of a tip—they want money. If you tell them you thank them, they

don't think much of that kind of a tip. I believe we ought to appreciate the work these people have done for us. If anyone does any good work we ought to show them we appreciate it, but it will be well perhaps to word it a little differently, so as to thank all who have assisted in helping pass our Bill. We don't want to single out a few. Compliment all of them. We ought to show them we appreciate it.

Pres. Smith—I don't think we need thank any one for the appropriation, because that was tendered to us—there was no objection. The man that got up the first objection was because we wanted \$200 more than before. He was willing to give us the \$1,000, if we had asked for \$1,000 for our appropriation. Not a word was said about it. It was the part that was to become a statute. There was no objection otherwise to our Bill; it was because of the foul brood law. Senator Berry carried it through the Senate; it didn't go through the house.

Mr. Stone—It went part way, and would have gone all the way if Senator Berry could have pushed it.

Mr. Bowen—The question in the long run is, whether it will be right to pass this resolution. It might do us more harm than good to pass it.

Mr. Poindexter—I think it would be well to give them all some taffy, and thank the Legislature for their assistance.

Mr. Becker—One of the gentlemen who helped me to pass it—I have forgotten his name—was at the State Fair and he came around to the exhibit, and he said, "I am glad I helped pass that Bill in the Legislature." He said he had never thought about it before, and said, "Now, I see you deserve it, and if I am elected to the Legislature, I will do all I can to help you."

Resolution was defeated.

Mr. Stone—"Do young bees have this poison when they are first hatched?"

Mr. Johnson—I believe any bees that are able to sting have it, because the principal part of the poison is the decomposed parts of the bee's body. The decomposed part might not be strong in the young bee. I used to live in Kansas where the rattlesnakes abound; a small rattlesnake's bite would seldom give very much trouble, but if the older one should bite, it would often prove fatal, and possibly as they get older the poison is stronger, still the young bees have the poison just the same.

Mr. Crim—I don't believe it is natural with the bumble-bees. I think they get the poison from the poison ivy. I have seen them visit it.

Mr. Bowen—I noticed that. It seems as though poison from bumble-bees is different from other bees. If a person gets partly used to the bee-sting poison, and gets stung with a bumble-bee it will sting like everything. I think their sting is lots worse. There is a difference between the stings of honey-bees and the bumble-bee.

BROOD IN JANUARY.

Mr. Stone—"Do bees have brood in the month of January?"

Mr. Poindexter—I would answer that by saying sometimes they do, sometimes not. It depends on the warmth of the hive inside. You can start the brood any time in the year by giving them warmth. I have taken hives in the house with winter weather outside, and there will be no sign of brood in the combs, and by warming them up they will start brood just the same as they do in the summer.

Mr. Crim—I opened a hive two years ago on a warm day and found two clusters of brood as large as my hand, and the bees were destitute of stores; they had no honey. I bought a keg of candied sugar and gave it to the bees, and let them alone till the first of April. When I found them they were nearly starved to death.

Mr. Bowen—I think it makes a good deal of difference with the colony. A strong colony with a young queen will have brood nearly all winter, while the older queen and the weaker colony probably will not have brood until the first of May. It seems that way with me. I think it makes a difference as to what kind of a queen is in the hive, for that reason I think it will pay many bee-keepers to make it a point to kill off the old queens and give the colony a new queen even if you have to buy them. I think the reason I have lost colonies in the winter is because the queen was old, and very naturally was not prolific.

FRUIT-BLOOM HONEY.

Mr. Stone—"Does anyone get fruit-bloom honey in supers?"

Pres. Smith—I have never got it in section; I got it in extracting combs.

Mr. Johnson—I got some in sections, but never any that was finished. But they never finish it in fruit-bloom; apples are first, then wild-grape—that blooms right after the apple and continues in bloom for a week after the apple. We often get surplus from those. The raspberry some years blooms early; it is not as regular as other fruit, which is in bloom at the same time. I often get surplus from raspberry, and sometimes a little from apple.

Mr. Stone—I want to say that I never give my bees a chance to give me any fruit-bloom surplus. I never allow them to have any place to store the surplus honey till the clover comes in. I want them first to provide for "their own, especially those of their own household."

Mr. Johnson—Don't you give them any room?

Mr. Stone—I don't put anything over the brood-chamber till after the white-clover flow begins. I raise the hive, and if it is heavy enough for surplus cases I lay a block on top of the portico—I go over all the bees that way. I begin putting on surplus cases for comb or extracting—mostly for extracting—then as soon as I go to the apiary I can see

where I want to take my load of surplus cases, by looking for the blocks.

Mr. Johnson—I have one objection to that way, because if your colony got strong and you didn't give them room to store the surplus they will crowd the brood-chambers, or else they will swarm. If they get strong before the fruit-bloom is over, and you have some blocks on, you put on surplus cases. Now, if the bees are strong enough to fill the lower chamber, I think they ought to have some room for the fruit-bloom. Nearly every year I have some colonies that are strong enough to begin work before the fruit-bloom is over.

Mr. Stone—If my hives got heavy enough for surplus honey during fruit-bloom, then they would have room given, but they seldom do; therefore, no fruit-bloom in the supers.

Mr. Becker—I use the shallow frame and they go right in and go to work. I don't care how soon the queen comes up to lay; I keep on with those that are strong till sometimes I have 4 or 5, and in that way they keep very strong, and when the honey-season comes they are in a good condition to get the white clover.

Mr. Crim—I think it depends upon the condition of the weather. On cold days the bees should be stimulated by feeding them until they do fill up the brood-chambers, and then when the fruit-bloom comes put on the supers.

HOW TO PREVENT SWARMING.

Mr. Stone—"Can we prevent swarming, and how?"

Mr. Becker—I say no. We can't prevent it; you can in some instances, but as a general rule you can't.

Mr. Bowen—I don't know about other parts of the country, but in our part of the country you can prevent it easily enough. There are scarcely any swarms in our part of the country. I suppose you can prevent swarming when conditions are unfavorable for honey. This year we had no honey, and where there is no honey there is no swarm. I had one swarm on May 15, but I had some honey to put with them and they came through all right. My son-in-law had a swarm on the first day of May, and they starved to death before the first of June. Where you have a fine honey-flow, I believe the natural disposition of bees is to swarm, and the only way to stop it is to give them plenty of room to work in. Give them room before they take a notion to swarm; after they take a notion, no matter what you do they will swarm. That question could be taken with the one we had a short time ago, in regard to the honey in sections. The question is whether you will give them room for the surplus honey-flow or not. I think Mr. Stone's idea is a good one, to weigh the hive. You can tell about how heavy the hive should be before you put on the supers. If you wish to prevent swarming you can put supers on just a little earlier; when they once take the swarming fever they will swarm in spite of all you can do. My experience is that some seasons bees will swarm more than in others. My experience year before last was that where they are given a reasonable amount of room they in-

crease about 3-4; whether we can keep that down by large hives, I question very much.

Mr. Miller—I don't know how long it takes to prove anything satisfactorily, and to prevent swarming I don't know how long it will take. I have been working at it ever since I had bees, and that has been since 1878. In the last 3 years I have had between 20 and 30 colonies of bees. Three years ago I had 100, but no swarms. I have had no swarms this year. I don't believe the bees will get the swarming fever until they get crowded. Just as soon as they get crowded and full of comb they begin to get restless, and fly out, and when they begin to cluster and begin to work on the bottom-board I begin to ventilate, and I haven't had a swarm. It is supposed we shouldn't put on honey-boxes until we find comb scattered between the frames, or when the white clover is in bloom. I don't believe I put my own on before that. Two years ago I had no swarms, and none this year, and I had a fair supply of honey. When they hang on the outside and cluster it is because it is too hot in the hive, and my bees will get into the boxes. I believe many people considered this topic this year in our bee-papers. It is quite interesting. "Where the honey-flow is short I can buy bees lots cheaper." The Langstroth hive has a little room for ventilating, but I get honey as much as any one with my kind of ventilating.

Mr. Stone—Before it is too late I want to say that last year we had the room above us—the G. A. R. room—and we paid \$2 for the use of that, because of the janitor's services. This year we asked for the Supervisor's Room; they told us we must let them know when it was wanted so they could have it ready, and said there would be no charges unless we gave the janitor some money for taking care of it.

Mr. Bowen—We ought to vote the janitor \$2 or \$3.

Mr. Stone—I think \$2 would be enough; it paid the janitor for the room above, and his services were just as much. These janitors are required to keep these rooms in order anyway, but the sheriff didn't like to ask them to do it for extra occasions without any money. If we give them \$2 it will pay for their services. What does the association think about it?

Pres. Smith—I think we should vote them \$2. A motion for that will be in order. It is moved and seconded that we allow the janitor \$2 for services in this room. (Motion carried.)

Mr. Bowen—The question of increasing is up—where is the economy in preventing an increase of a reasonable amount? For instance, you can't get honey without bees; you can't get bees without a queen; if we have two queens they will get two strong colonies. Where there is just one queen there will be but one strong colony. My experience is that I get more from 2 colonies than I do from 1. If the first one comes from the original, and another comes, I have 2 queens doing the work of 1. They produce 2 colonies of bees where I did have only 1. That being the case, I can't figure out the economy of preventing swarms.

Mr. Miller—It makes a difference. It is true that we can get 2 swarms, but we can buy a swarm for \$1 or \$1.50. For that reason I try to keep bees from swarming. I would rather divide the colony than to let them swarm and rob the old hive. I prefer the boxes without the sections, for on an average we get more honey in the same length of time than where the sections are used. Where there is plenty of honey it won't amount to so much if it is in dove-tailed sections. There are quite a number of people who prefer to prevent swarming.

Mr. Poindexter—My experience has been that circumstances alter cases. But I have succeeded in getting more honey where I have kept the bees together, than I have where they are divided. The principal thing is, "In Union is strength." It is true in my case. I prefer to have 100 colonies in one place than undertake to divide them. In the ordinary season I get more honey where they are kept together, and if I want to make any increase I make it the latter part of the season. I made one this year in October; the bees seemed to be in a right condition to bear dividing.

Mr. Becker—My experience is that whenever a colony swarms, just as well take the sections out of the old colony; after it is nearly finished they will go to work and seal it up; if half finished it will stay that way a long time. In the first place when the colony swarms all of the working bees will go with the new swarm, and the few workers left in the hive until the young bees get strong enough and well enough to go to work will not finish. Just after they swarm they begin to build queen-cells. You look through the colony and you will find several of them will be without a queen. I can't depend upon getting any surplus from the colony that has swarmed, unless the season continues for a long time, then I expect to get honey; but if it is a short season, like 2 weeks I don't depend on getting any.

Mr. Crim—I have had experience in that line. I remember 3 years ago I had 2 swarms in May, they were good swarms. I hived them, and part of them stored two supers of 29 sections, and then swarmed again, and scarcely got enough to winter them.

Mr. Bowen—It isn't a question of how it is now; look out for the future. You might not get surplus from the old colony, but you get it from the new one. I had 2 strong colonies last season where I should have had but 1, if they hadn't swarmed. My opinion is that it depends upon the season; if there is a good honey-flow you will get surplus. Of course if there is no honey-flow it makes a difference. I have had them swarm, and the new swarm would store a lot of honey, and the old colony would store from 40 to 75 pounds of honey after the swarming. Of course that was a good season. But if it is just an ordinary season they will produce surplus, and you will have 2 strong colonies.

Mr. Miller—If you have as many bees as you want, you can keep those bees by taking care of your colonies. We don't want many swarms. The question is how to prevent swarming. I believe it can be done. None of you have an oppor-

tunity to ventilate as I have, because you don't use the kind of hives I do. The majority of the Langstroth hives have $\frac{1}{4}$ -inch opening. This swarming business can be controlled.

Pres. Smith—I let the new colony go to work where the old one stopped. If they have sections partly filled I put them on the new hive, and they fill it right up just as though they had never swarmed.

Mr. Stone—My experience has been that when a swarm issues from a hive the old colony does just about as well as the new one, provided there is no afterswarm; that would cause trouble; the old colony won't do anything after an afterswarm. If I have just one swarm I look for good results from the old as well as the new. We don't get much surplus from the swarms, especially if they are late. I had just one swarm this year. I have had early swarms in good seasons fill 2 and nearly 3 supers of 28 sections each.

Mr. Crim—If you take the old colony and move it away they will work with the swarm; but it doesn't work all the time.

Mr. Becker—The colony that swarms takes the old queen; there is no queen left in the old colony; now supposing everything is filled up with young bees, it takes about 21 days before they will hatch. The new queen will emerge in about 10 days; there is 30 days gone before you can even start an increase of bees. My experience has been that you can get honey from the old colony if there is a honey-flow, while with the other the chances are you wouldn't get any.

LENGTH OF A GOOD-SERVICE QUEEN'S LIFE.

Mr. Stone—"How long can a queen be depended on for good services?"

Pres. Smith—Two or three years.

Mr. Miller—A home-bred queen about 3 years, and a foreign one about 2. Sometimes not over 6 months; shipped queens don't last very long.

Mr. Stone—I have had shipped queens last 2, and sometimes 3 years.

Mr. Bowen—In talking with a large bee-keeper he told me the past summer he had 2 colonies from one queen; she brought off strong colonies. He clipped her wings, and when there was a swarm all he had to do was to put his hand on the queen, put another hive where the old one was and the swarm would come back and go to work. It is either 6 or 7 years in succession that he had that queen. I have read a good deal on this subject in our Journal. Some say they can't keep queens over 2 years. I had one queen that did good work for 8 years. I must confess I am not posted on this. I know I introduced a dozen new queens this year and I don't believe I have more than half of them now; but that was because of the season. How long can we depend on queens for good service?

Mr. Miller—There are exceptions to all rules, but I am of the opinion that home-reared queens are longer-lived than shipped queens; not so much from my ex-

perience, but from what others have said. It is my conclusion that we ought to re-queen our apiaries every 3 years. There are some queens that won't last very long.

Mr. Crim—I move we adjourn.

Pres. Smith—Some of the members want to go away at 4:30. Has all the business been attended to?

Mr. Stone—I thought of one thing a little bit ago. Probably the Executive Committee can attend to it. It is the program for the coming year, but I believe that the Executive Committee was to formulate the program and send out to the members for those they wanted on the program. I understand that was the decision.

Pres. Smith—We reached that conclusion yesterday.

Mr. Stone—I don't think of anything more, Mr. President.

Pres. Smith—It is moved and seconded that we adjourn.

Mr. Bowen—Before we adjourn I wish to speak again about increasing our membership. Make special attempts for another year, and each one of us try to bring one other member with us to the convention.

Mr. Crim—Would it be out of the way to bring beekeepers to the convention that are not members?

Mr. Stone—Bring them to the convention. They might become members. They can take part in the discussions.

Mr. Becker—About these postal cards spoken of the afternoon preceding.

Pres. Smith—Every member make an effort to bring in a new member. It is moved we adjourn. All in favor signify by saying Aye. (Carried.)

Adjourned *sine die*.



REPORT

—OF THE—

Western Illinois Bee-Keepers' Association

The fourth semi-annual meeting of the Western Illinois Bee-Keepers' Association was held in the county court house September 20, 1905, and was fairly well attended. All bee-keepers present reported a very light crop of honey, some getting no surplus at all. Mr. G. W. Caye, of Kirkwood succeeded in getting 4,000 pounds of surplus from 170 colonies, which was about the best average.

Mr. J. Q. Smith, President of the Illinois State Association, and State bee-inspector, was present and gave an interesting talk on foul brood, and told of his work of inspecting bees throughout the State. Some localities in Illinois are badly infected with foul brood, other localities being entirely free from the disease. Mr. Smith has, during the past year, visited many infected apiaries in different counties and has been quite successful in treating them. It is probably well known that this State gives \$1,000 per year to aid bee-keeping, but bee-keepers are not compelled to treat or have their diseased bees treated unless they are willing, but so far, Mr. Smith has met with no opposition. All have not only been willing, but most of them anxious, to have help in treating their bees. So the Illinois foul brood law and appropriation are a decided success even though the compulsory clause was not allowed. However, we may have need for that clause in the future.

Mr. Smith gave a cordial invitation to the Association to join the State Association. After some discussion it was decided by unanimous vote to do so, in a body.

The question-box was one of the main features of the convention.

Mr. Alva Reynolds reported having, by Inspector Smith's help, entirely rid his bees of foul brood.

Mr. Reynolds is one of the oldest bee-keepers in this part of the State, and attended bee-conventions 25 or 30 years ago. He at one time lost every colony by foul brood, and quit bee-keeping for about 10 years; but three years ago he caught 26 swarms in his old hives, and so, although over 70 years old, he again became a bee-enthusiast. But it seems that his old hives, that had been empty for 10 years, still had spores, which developed the foul brood.

Mr. W. B. Moore presented all bee-keepers present with a money purse, and wished them all success in being able to get it full of honey-money the coming season.

President Johnson reported having received two Punic queens from John Hewitt, of Sheffield, Eng., one of these being a virgin, and although about 21 days old when received, she was successfully introduced and soon became

fertile and began laying. So far the Punics have proven to be all right. He expects to give them a fair trial next season.

Mr. E. D. Woods reported that he had always found that colonies having young queens wintered best and came out strongest in the spring, and asked that all present make it a point to mark all colonies having young queens and report at our spring meeting as to their success in wintering. Several questions pertaining to bee-culture were discussed, but, not being a shorthand reporter, I am unable to do justice to them.



J. E. JOHNSON,
President Western Illinois Bee-Keepers' Association.

We are preparing to hold the best convention ever held in Galesburg next spring. Mr. J. Q. Smith, Mr. C. P. Dant, Mr. M. Bevier, and Mr. Baxter, have promised to be with us, and probably other noted bee-keepers. All bee-keepers are cordially invited to attend. All may have a voice in the meeting, whether they are members or not. The next meeting will be held on the second floor of the court house at Galesburg, Ill., on the third Wednesday in May, 1906.

The price of honey is advancing, which has given some traveling men an opportunity to furnish grocers with adulterated honey. We have made it our business to watch this

matter and advise grocers in regard to honey of this kind, and until this fall they have let it alone, but the scarcity of honey seems to have tempted some of them, and the State's Attorney, with the aid of the State Chemist, was able to make a wholesale arrest, and 22 grocers were fined \$25 each for selling adulterated honey, vinegar and butter. The grocers pleaded guilty, but claimed that they knew not that the goods were adulterated, and thereby got only a \$25 fine; but a second offense will not be less than \$100. So I think they will not risk offending against the pure food law again; not only so, but they will give us strict attention when we talk honey to them, and the genuine article will look nicer to them, and they won't haggle over a fair price for the same. The daily papers gave this matter an airing, so the consumer will know that all honey bought of these stores in the future will be pure honey.

I had the pleasure of attending the meeting of the Illinois State Bee-Keepers' Association at Springfield, November 21 and 22. This association is now, I believe, the second largest bee-keepers' association in the United States, there being something over 200 members. Each member the coming year will receive a large cloth-bound Report of the convention at Springfield, and of other conventions. This book will also contain a lot of other information on the treatment of foul brood, etc. Every bee-keeper in the State should be a member of the State Association; the Report alone will be worth more than the membership fee. Anyone who will send Mr. James A. Stone, Route 4, Springfield, Ill., the Secretary, \$1, will be given membership in the State Association and the National Bee-Keepers' Association for one year, and also the Report.

There are many attractions at Springfield, as visitors can see the old home of the great statesman and president, Abraham Lincoln, as well as numerous other points of interest.

Williamsfield, Ill., Dec. 7, 1905.



REPORT

—OF THE—

Chicago-Northwestern Bee-Keepers' Association

The annual meeting of the Chicago-Northwestern Bee-Keepers' Association was held in Chicago, Dec. 19, 1905.

The meeting was called to order by Pres. George W. York at 11:30 a. m. Invocation by Rev. Robert B. McCain.

Pres. York stated the purpose of the present session was intended to be largely social, and the business session for the election of officers and other matters would be held in the afternoon. He called for suggestions for the present session which might make the occasion one of profit and pleasure.

By way of introduction, each person present was requested to rise and announce his name, if not already known by the President.

Pres. York—I am ready for any suggestions for this meeting.

Rev. McCain—I do not know whether I speak for any one but myself or not, but I have observed that the question-box is always interesting, and if there is no better suggestion, I would suggest that the questions be prepared, and that we discuss them.

COMB HONEY OR EXTRACTED—WHICH?

"Which has the most promising future before it, comb honey or extracted?"

Pres. York—I think I know how Dr. Bohrer would answer this question, but I am not going to call on him first. We will let him talk after a while. What do *you* think, Mr. Hilton?

Geo. E. Hilton—So much depends upon circumstances. It is rather a hard question to answer, in my opinion. Of course, if we restrict ourselves to any particular territory, we could say comb honey in one place and extracted honey in another place. But taking the whole territory represented by the National Association, the possibilities are that extracted honey will predominate in the future. While comb honey is a fancy article, it perhaps will remain a fancy article and not remain so much an article of commerce, perhaps, as extracted honey will. Our large producers are producing extracted honey. You are well aware that my specialty is comb honey, but I do believe that the large aggregate of honey that is going to be produced in future will be extracted honey, from the standard of tons and carloads.

Pres. York—I wanted Mr. Hilton to speak first, because he is now Vice-President of the National Association. Has

anyone else anything to offer on this subject? I know Dr. Bohrer wants to talk, and so we will hear from him now.

Dr. G. Bohrer—I did not know I had acquired a reputation for being a talker. I have always tried to be modest. My wife took that in hand some time ago. She is my senior by four years, and said she "took a boy to raise." Mr. Hilton has voiced my sentiments, even if it does not amount to what he thinks it will. That is, extracted honey will predominate in the future. It most unquestionably ought to, because more honey can be produced by that method. It can be put upon the market cheaper than in any other form, and, besides, it is a more wholesome article of food in that shape. Beeswax is no more digestible than diamond stone, and if it has any effect at all, it is positively an irritant to the stomach. I have witnessed that in my practice of medicine. A number of cases of cancer of the stomach and other digestive organs have come under my care. For those patients, I have found extracted honey better than any other article of diet, while the patient could not bear at all honey containing wax. While honey is a little more enticing and attractive in the comb, I have learned not to want to eat everything that looks nice. There are people who will argue that there is such a thing as "artificial comb," and that bee-keepers all around are buying glucose by the carload and filling the comb that is constructed artificially, sealing it over and offering it for sale. Last winter, in Topeka, I got up before an audience of many more people than are here to-day, and offered \$500 for a section $4\frac{1}{4} \times 4\frac{1}{4}$ filled with artificial comb and with artificial honey. A man offered to bring in the combs. I appointed a committee to examine the combs, and asked him if he were satisfied with the committee. He said he wanted them to be skilled bee-keepers. I selected three men, and they pointed out to him at once that the sections were not alike. I said, "You can see, my friend, if they were made by machinery, they both would be alike, and they are not. Here is one section filled out to the edge of the comb and is capped over; here is another that the cells are not filled out, they are not fully constructed, and not filled with honey." He said he could see the point to that, but he still wanted to get his \$500, and he said, "I think they have a machine for each section." I asked if that would not require a large amount of machinery. He was finally convinced that the thing is simply impossible. Here is a sheet of wax; you can stamp cell-foundations on both sides of it, but it is not artificial comb—only artificial comb foundation, until the bees draw out the cells. We can go that far, but no farther. If we could pull out the cells, the walls would be so delicate that they would soon be broken down. We have to disabuse people's minds in regard to this matter. They don't understand it; it is hard to get them to believe it. They think they are being imposed upon there. They are being imposed upon. Some people declare glucose is superseding honey!

A. K. Ferris—I would say it depends upon the man more than anything else, and, in explanation, I would say, when I started selling honey in our locality, I could get but 7 cents a pound for extracted honey, and it was hard work to sell it

at that. But as soon as people found I was putting a good article on the market, and they found out what a good quality of well-ripened honey it was, when I had nearly 2,200 pounds to sell, I sold nearly all of it to one store—nearly 5 barrels to one store—and two weeks later I could have sold the same amount in addition, to that same store, at 10 cents a pound. The reason was, I put out a good article, well ripened. Some



GEORGE W. YORK,

President Chicago-Northwestern Bee-Keepers' Association.

bee-keepers put unripened honey upon the market, and it has done untold damage. If a man puts out a good quality of well-ripened honey, he can make more money out of extracted honey than out of comb honey.

Dr. Bohrer—Mr. Ferris, do the people of your part of the country ever question the extracted article?

Mr. Ferris—People said I was feeding extracted honey, glucose and sugar. I made no reply whatever to the charge, but told the people I did feed my bees sugar, a half ton of it.

and my honey has sold higher this year than ever before. The people found my honey was good. They did not care whether it was adulterated or not, but I put it out under special seal, and they know, under the laws of Wisconsin, that no honey could be put out under the labels such as I use without its being pure.

Dr. Bohrer—I would understand, then, that what you fed them was the article that you put on the market?

Mr. Ferris—No; according to the statements made, the people thought I did put it on the market. That was not the case. I fed to winter my bees. I feed entirely sugar. I use no honey whatever in wintering my bees. But it had the same effect on the people, as though it had been adulterated. Yet, on the other hand, honey never sold better with me than it did this year. In fact, I could have sold four crops if I had had them, and would have had it all sold by this time.

J. E. Johnson—Speaking from my own experience, if I had my way, it would be extracted honey. I suppose if most bee-keepers had their way, it would be the same thing, but we have to do the way people demand that buy the honey. The people want something nice, and just as long as they want something nice, we have to furnish something nice. I have no doubt but there will always be a good future for both comb and extracted honey.

Wm. M. Whitney—May I ask what the question is?

Mr. York read the question, when Mr. Whitney responded, "I don't know."

Thos. Chantry—I would just like to say I agree with Mr. Johnson. If we want people to eat honey, we must give them what they want. If I had both to sell, I would sell two carloads of extracted honey to one of comb. Nevertheless, those who wanted comb honey would not buy the extracted.

Mr. Whitney—To whom would you sell the extracted honey—to the ordinary consumer, or to some jobber?

Mr. Chantry—I am speaking of retailing to consumers entirely, both comb and extracted honey.

Mr. Fletcher—My experience is that the comb honey has the most brilliant future before it, for two reasons: First, people of intelligence are ascertaining that it cannot be adulterated. They are coming to that conclusion; there has been so much light thrown upon that subject. In the second place, they are satisfied that extracted honey can be adulterated. As to feeding sugar to bees, that would be unprofitable.

Mr. Moore—I have been doing some very heavy thinking here. You see, I have been selling honey to families for about 20 years, and, naturally, have some opinions. The hard job is to convince the public of these things you have been speaking about. My opinion is, there is only one way to do it, and that is by personal acquaintance. People buy of me because they like me. The illustration is, you have got to convince people by your personality, that you are dealing fairly with them, and that is the only way there is any future to this family trade. Of course, when you are selling to the wholesale dealer by carloads, you have another purpose altogether. I do believe that the solution of the honey question for the average bee-keeper in our land is in supplying everybody

within 5 or 10 miles of his home. Get a personal acquaintance with them. After a while they will learn that your honey is good, and will demand it.

Dr. Bohrer—What effect would a national pure food law have upon this subject of adulteration of honey? Would not a national pure food law convince the people, if it were rigidly enforced? Would not that go to quite an extent towards convincing the people that there was no such thing as glucose or sugar and wax sold to the public for honey? I think that is one of the things we must have.

Mr. Moore—It seems to me that the only effect these pure food laws have is advertising. They do not convince anybody of anything, but make people more particular to inquire if your honey is pure. I do not believe there is any other effect. The more advertising there is, the more particular people are; but as to their faith in the purity of the article, it is less than before, because there is so much said about it. It increases their faith in the individual, perhaps.

Mr. McCain—I am not an authority on bee-keeping, but I have listened to this discussion, and I have tried to think what I would gather from it if I did not know anything about a bee-hive. Men have admitted here that they feed tons of sugar. What impression is that likely to make on a man's mind? He is inclined to think sugar is fed for perceptible purposes. Oh, yes! I told you so! The conclusion I come to is this: We cannot expect the public to believe that honey in the comb is absolutely an unadulterated article until we can make them understand how the section is made in the hive, and something of the character of the work done by the bees. It is a matter of education. If I tell a man I fed my bees 500 pounds of sugar, he does not know where that sugar goes. He does not know anything about it at all. The impression would be made in his mind that it goes into the hive, and that I take it out in the comb form and sell it.

Mr. Ferris—One point I want to speak about that has caused the most trouble, and that is, the bee-keepers themselves are putting on the market an inferior article. When I made the statement that I feed tons of sugar—which I do—it was to impress the fact that though I do feed tons of sugar, when people get hold of a good batch of honey, it settles the question with them. That is why I wanted to impress upon the bee-keepers to stop putting unripe honey on the market. That is doing more against the bee-keepers' interests than anything else I know. When people get bad honey—extracted too green—they do not forget it, and it takes a good while to get them to be willing to try again. Honey that has no flavor is not well ripened, or has been injured by storing in a cellar, if put upon the market always works an injury to the bee-keeper's interests. If people would work to that end—putting a good article on the market—it would cover the question. While my feeding tons of sugar may have had some effect on the people in one way, in another way the superior article I have put out has more than counterbalanced that, so that the output has more than doubled.

Mr. Whitney—On this matter of feeding bees for winter stores, I have come to the conclusion that I would sooner pay

7 cents a pound for extracted honey than 5 cents a pound for granulated sugar. I have had a little experience that has satisfied me that honey is really cheaper at that price than granulated sugar at 5 cents a pound to feed. And if we would stop feeding sugar entirely, and feed a cheaper honey that we can buy at wholesale at 7 cents a pound, we can get rid of all this talk about feeding bees sugar to go into the sections.

Mr. Moore—How about the dissemination of foul brood?

Mr. Whitney—Buy from a good, honest man that would not sell foul brood.

Member—Where would you find such a man?

Mr. Whitney—I would not need to go out of this room to find honest men.

Mr. Johnson—At Galesburg, Ill., we have been pretty careful to look after the market, so that there is no adulterated honey on the market. Years ago a good deal of it was shipped in, before we had a pure food law. This year honey was scarce, and some merchants thought they would bring in some of it. As a result, two grocers were arrested for selling adulterated honey, and fined \$25 each. They would not have gotten off as easily as that if they had not pleaded guilty, and said they did not know it was adulterated honey. As I understand it, there is very little adulterated honey sold in this State. These fellows tried it by getting it from traveling salesmen from another State.

Mr. Hutchinson—I think it is a good deal like asking which has the most promising future, a man or a woman. I think there is no difference in honey; both comb and extracted have a place and will continue to have a place in the market.

Mr. Muth—They both have a place. In the cities, there is a big demand for comb honey. The demand for the consumption of extracted honey is not as large as people have an idea. However, there are other ways in which extracted honey is used. In manufacturing lines the demand is growing larger every year. However, fancy No. 1 comb honey is easily sold. The more fancy honey there is on the market, the greater the consumption. When honey does not grade nice, the bee-keepers soon notice a fall in honey. It decreases the consumption of honey, because people buy it thinking it is comb honey, and they do not want any more comb honey. On the other hand, the consumption of extracted honey is very much on the increase. You will notice in the far West and the South they prefer to produce the extracted honey, and a great many people produce carloads and carloads of it, where they do not produce any comb honey at all. It always finds a market. It is just like wheat on the market, it has a price.

Dr. Bohrer—Is not the lack of uniformity in the weight of the section affecting its sale among the people? For instance, it is called "a pound section," sometimes weighing 12, 14, 15, but seldom over 16 ounces. If I am buying a majority of sections that don't weigh a pound, I want to buy something that does weigh a pound, and more than a pound, to even up.

Mr. Muth—That cuts no figure in the sale of honey at all, because the retailers adjust the prices. They sell by the piece

and not by the pound. The retail grocers do not want full sections. They want to make money.

Dr. Bohrer—People sometimes tell me, "I would buy the section honey, but it is called a pound, and it does not weigh a pound. I will not buy it." And they give it a severe "letting alone." That is another reason why I say extracted honey will come to the front when people learn it is absolutely pure.

Pres. York—Personally, I have never heard anybody say these things. I would like an expression on this point. Have you actually heard people object to light-weight sections? I have never heard that complaint.

Mr. McCain—Ever since I have been bee-keeping, I have used the Danzenbaker section, and you know that is light weight. I believe it is really true that there is some objection to it. I have been asked repeatedly, "Does it weigh a pound?" "No," I would say, "it weighs about 14 ounces;" and they hesitate whether they will take it or not.

Mr. Muth—You asked the consumer, didn't you, or the consumer asked you? I believe if you go around and sell to a lot of grocers, they want short-weight sections.

Mr. McCain—I never had that trouble in Chicago. I never was questioned about it in that way here, but at home, in a town of about 5,000, the general impression is that a section of honey should weigh a pound.

Dr. Bohrer—The only reason the grocer wants it that way is because he buys by the pound and sells by the piece.

Mr. Whitney—I had an order last fall for some honey in sections, and the groceryman wrote me to be sure not to have the cases weigh over 22 pounds net.

Pres. York—How many sections to the case?

Mr. Whitney—Twenty-four. I had sent him short sections, and they just exactly suited him.

Pres. York—We will go on to the next question.

LATE FEEDING OF BEES.

"Should your bees be short of stores at this date, what would you feed them?"

Rev. McCain—Full frames of honey.

Mr. Johnson—My impression is that in feeding bees at this time of year, you cannot, because you cannot separate the cluster; it is usually too cold for that if they cluster at all. I have wintered colonies that had hardly any honey in the hives at all, by merely laying sections flat down, right over the frames. The bees will always take honey from above and pass it down, but it seems they will not take it from below and pass it up. In this way, I have wintered bees almost entirely. You may have to look in a little in the winter, and probably give them some more sections.

Member—Do you mean in a cellar?

Mr. Johnson—No; out-of-doors.

Mr. Hutchinson—You can feed candy. Make a sheet of candy that you can lay over the tops of the frames, and cover up with a cloth, and you can feed them out-of-doors very well. Or you can feed syrup in the cellar if you wish. It is more trouble. I was with a bee-keeper last spring at Manistee,

Mich., who did not have money to buy sugar with, and he kept feeding them (sugar) syrup all winter long. He took a Mason fruit-jar and had a hole cut in the cover large enough so that the jar would just fit that hole. The bees came through in fine shape, feeding on the syrup all winter long, having very little honey in the combs. I would prefer candy, if I had it to do, but that shows what can be done.

Mr. Ferris—I took 10 2-frame nuclei, put them in cellar in mid-winter, for experiment. I took a 2-quart Mason jar full of syrup, 10 pounds of syrup to 1 pound honey, and fed them. All of the nuclei made me full colonies, averaging 100 pounds of honey each the next year. I did not lose one of the 10. They all came through in good shape. I did that only as an experiment.

Mr. Whitney—As an experiment, I have carried colonies through from February with a 2-pound cake of maple sugar. That is better than anything else I ever saw to feed bees, and I think it is about as handy as anything.

AFTERNOON SESSION.

A discussion of the question regarding a continuance of the committee in the interests of legislation for bee-keepers in Illinois was first taken up.

IMPORTANCE OF FOUL BROOD LEGISLATION.

Mr. Wilcox—If you do not have a compulsory foul-brood law, you will have no foul-brood law at all. No foul-brood law can be effective for the purpose intended without power to treat or destroy the bees; or, I will say, with the power to enter upon the premises of any bee-keeper for the purpose of inspecting, treating or destroying the bees, we can exterminate foul brood. We know that in Wisconsin. Experience has demonstrated it. It is necessary to have the power; it is not necessary to use it very often. There will be very few instances in the history of any State where it will be necessary to use all the power which the law ought to give you. That is the essential fact in the case? Mr. France has been inspector for many years, and he was thwarted at every corner when he first started out, by want of authority; but when authority was written in the law, and he showed them he had authority to enter upon premises and treat or destroy bees, they surrendered peaceably, and thanked him afterward for what he had done. To-day, in that State, there is no one, to my knowledge, who objects. They are convinced that it is for their interest, and we are glad we have the law just as it is. I do not see how we could improve it.

Mr. Dadant—A little while ago Mr. Wheeler made the statement that in his opinion some bee-keepers do not want a foul-brood law, and that it was in contradiction to my statement. I did not say there were no bee-keepers who do not want a foul-brood law, but my belief is that those who oppose it are in the minority. The fact is, I am sure of it. Mr. J. Q. Smith told us he did not think it was necessary, but when we told him if he happened across a man whose bees had

foul brood, and he refused to have it attended to, we ought to have some method by which he could be compelled to have it attended to, he admitted it was so. People who have good judgment will not object to it. When they find a doctor ready to treat their colonies, and do it kindly, they will certainly be willing to have their bees treated. But the man who does not care whether people succeed or not, who cares nothing for his bees or his neighbors' interests, if that man's bees have foul brood, and we have a foul-brood law, the inspector ought to have the right to exercise full authority in the case.

Mr. Russell—There are bee-keepers probably in Illinois as well as in Minnesota who object to a compulsory foul-brood law. I want to tell this convention that those are the very people for whom we need a foul-brood law. We have them who will not allow an inspector to inspect their hives. They sell bees and scatter the disease throughout the State. It is for these people that we need a foul-brood law—for the obstinate ones that we need a compulsory law.

Mr. Wheeler—The convention probably did not understand me exactly in regard to the foul-brood law. The fact is, this Chicago-Northwestern convention has talked for years, and so strongly, that it is an absolute fact that we can cure foul brood. You people take that for granted in all your argument. Now, I will take the ground that you do not cure it; that your methods are not up to the point of curing it. You want to go to work and pass laws obliging us to allow an inspector to come into our apiaries and experiment. We take the ground that you cannot cure the disease. You may cure it apparently for two or three years, but it will come back if you have genuine foul brood. Now, what good does an inspector do? What good does destroying the hive do? It reminds me of a time about 20 years ago when the potato-bug made its appearance. My father went out and hired boys to pick bugs, and many other people did the same. There were a few neighbors, however, who would not pick bugs, for they said the cost would be more than double the value of the potatoes. We wanted to pass a State law compelling people to burn up the bugs, to burn up their potato patches. That is exactly the ground you are taking in this foul-brood law. We can experiment. Go ahead and experiment and learn a cure; find out exactly what will be a cure. I know it can be cured, apparently; for a year or two it will disappear almost entirely—no sign of it; but almost as sure as the sun is to rise, the next season it will make its appearance. Bee-keepers say, "My neighbors have it." That is not the fact. I can prove it. I have experimented along all sort of lines with fumigating, putting combs into an air-tight tank, and fumigating with formaldehyde. I bought two big tanks, put in combs, fumigated the bee-hives as the California man said—everything that had ever been tried and written about I experimented with. And you can for all practical purposes take care of your bees, shake them out of the hives, give them empty combs and empty frames, and for a few years your bees are clean. But invariably it shows itself again. Before it makes its appearance to the human eye, the germ is there in the combs, and a bee-inspector might come along and

declare those bees free from all disease, and in a few months there would be a few more cells and the next year it would appear.

Dr. Bohrer—Do I understand Mr. Wheeler to say that for that reason there should not be a foul-brood law passed?

Mr. Wheeler—Yes; and for the reason that a grafter or a man who has a pull would probably get the place of inspector.

Mr. Holtermann—Seriously speaking, I am a little surprised to hear a discussion of this kind here. If it had been in England where they were discussing the advisability of a foul-brood law, one would attribute it to their conservatism. But I am surprised that we can be seriously discussing this question in the United States. We *know* that foul brood can be cured. Mr. Wheeler may not have succeeded in curing it, and we may have some sympathy with him in his trouble, but there are too many of us who can say we know foul brood can be cured. And even if it could not be cured, it would need an inspector to see where the disease was, and stamp it out. We are certainly not prepared to admit that it cannot be cured. And I think Mr. Wheeler hardly means to make the accusation that every foul-brood inspector is a grafter or one who has a "pull." I think that is a little too strong. There are good men among the inspectors. If I may be allowed to say so, I would be much in sympathy with seeing that you get a foul-brood law passed.

Dr. Bohrer—I do not know that a law will stamp out foul brood, but as was just remarked, if we cannot afford a permanent cure, if we can only check it, we should have the law. I am satisfied that foul brood can be cured. I never saw but one case in my life, and I cured it. I will tell you how I did it, and the experience I had with it, and for that reason, if no other, I would recommend a law upon that subject. A neighbor of mine had only one colony of bees, and he told me there was something wrong with it. He asked me if I would stop and inspect his hive. I did so, and the most terrible stench that ever came to my nostrils came out of that hive! I said, "My friend, I cannot imagine anything that would be fouler than this, and we will call it foul brood, anyway." There were very few bees hatching. I said, "If you have some comb foundation, and a new, clean hive, we will fit it into the frames, shake these bees all off and drive them into it, then take this bee-hive, combs, honey, frames and everything and conceal them somewhere until after night, and then put it all somewhere and burn it." I had 20 or 30 colonies of bees at home, and I slipped into the house as quickly as possible. I took off every particle of clothing, and told my wife to go and boil them. Everything I had about me was thoroughly cooked. I tell you, no foul brood will ever start up where you adopt such measures as that. You want your foul-brood law to give your inspector full authority. Do not tolerate or accept any half-way legislation upon that subject. We have a law in my State (Kansas), but I do not exactly like it. The law provides for a county inspector, but it does not pay

him sufficiently to justify a man in leaving his home—only \$2.00 a day. You cannot get a man to do very much work on that account. In our county they want me to take hold of it and inspect the bees. I said, "I will tell you how to cure it, and when the legislature meets again, let them understand it is not graft at all. Frame your law so the fact can be established that the disease exists and is doing mischief. Then clothe your inspector with authority to go and effect a cure." When you come to pass a State law, be careful how you shape it. I am not sure but a law that will provide for a county inspector will cost the people the least money. It is not very expensive for the County Commissioners to appoint an inspector of that kind and pay a competent man. But to say we don't want any law because somebody has made a failure—that won't do! We might just as well say we don't want laws upon the statute books prohibiting murder or robbery because these things go on, and the law does not stop them. But if you can check the disease, it will pay to have a law for that purpose, if no other.

Mr. Kimmey—I would like, first, to know if Mr. Wheeler was giving us his experience with foul brood?

Mr. Wheeler—Ask any question you like. When you get through talking, I will talk.

Mr. Kimmey—That is what I wanted to know—whether you were speaking from your own experience.

Mr. Wheeler—In regard to the insinuation I made about grafters and all that, we know what Mr. France is. We all love him, I may say. He is a man, every inch of him. What Wisconsin has had in Mr. France is no sign of what Illinois may have. We must look ahead to that. Not only that, but to people who have thousands of dollars at stake in the bee-business, it is a great deal more of a vital question than to a man who has one or two hives, and I claim that the men who are doing a honey-producing business on a large scale are in a great deal more danger of the disease continuing and staying than if he has only one or two hives to put into a furnace and burn up. He is only a few dollars out. Of course the beehive manufacturers want it. But if we can get along and keep our hives, we are going to do it. We can scour them, burn them out, and all that, and I have no doubt but The A. I. Root Co. cured the disease when they had it. They could burn up their hives, foundation and all, and get new supplies out at their factory without much cost to them. We cannot do that. You cannot do that. The point is, there is so much stuff around. And these gentlemen are satisfied to burn up the hives. I saw that done once, and the next day after the hives were burned the bees swarmed over that pile, licked up the honey they found and carried it home.

Dr. Bohrer—That honey was not burned.

Mr. Wilcox—You cannot burn up honey in that way. I have seen the disease carried back to the hives in that way.

Mr. Wheeler—I consider myself just as careful as

any man can be. I have experimented just as carefully as any man in the United States can, and I believe it is absolutely impossible, unless bees are destroyed and the hives burned up, to eradicate that disease if you get the genuine thing. It has no terror to me. I do not believe any man needs to be afraid of it. I do not believe there is anything in it to be so much afraid of. It is simply a question of taking care of your bees. Don't allow them to get any diseased honey. But so far as absolutely curing it, I do not think it can be done.

Mr. McEvoy—I cannot quite agree with Mr. Wheeler. I will not stake my life that I can cure it every time, but when you are going on the theory that it cannot be cured, you are making a mistake.

Mr. Dadant—I would like to give you one instance where it would have been good to have had a foul-brood law in Illinois. A person died near East St. Louis who owned some bees that had foul brood. The administrator was told the bees had foul brood, and he hastened to sell them as quickly as possible to get rid of them. If we had had a compulsory law, it would have been a criminal matter to have so disposed of those bees.

Mr. Kimmey—I asked Mr. Wheeler the question in good faith, whether he was talking from his own experience. I expected to ask him if he believed the disease to be contagious. I am talking about something I know nothing about. I never have had foul brood in my apiary. I am an amateur bee-keeper. It seems to me if you have had foul brood and stamped it out, and it is contagious, it had come from some place else. That is what I was trying to get at. He might have gotten it from his neighbors' bees.

Mr. Wilcox—There is just one feature of this case that has not been touched upon yet that is important. The fact is, you want to create an office. The inspector must be a State officer, and you cannot have it unless you prepare for it, and pass a law authorizing it. You must have a fixed appropriation for this purpose and not depend upon the Legislature to make an annual or biennial appropriation for this purpose. It must be an appropriation that will come, year after year, and to get that you must proceed as we have done and make it a State office. Make it a fixed appropriation after the manner of Wisconsin. It is necessary to have such an officer. He may be appointed by the Governor, or by some State board after some civil service examination, perhaps. It is not a matter for us to discuss as to the best method of having him appointed. In Wisconsin we are satisfied to have him appointed by the Governor, upon recommendation of the bee-keepers.

Mr. McCain—It seems to me we ought to bear in mind that we are not legislating against ourselves. The bee-keepers of this Association and of the National are, in the majority, intelligent men, who can cure cases of foul brood if they have it. I am no expert, but I have cured two cases—not in my own yard, but in my neighbor's yard.

We are not legislating against ourselves. We ought to go in heartily and support such a resolution as this in order that those who do not care may feel the force of the law.

Mr. Kluck—I am in favor of a foul-brood law where we can force our neighbor, who does not care whether his bees have foul brood or not, to have the disease treated, and a compulsory law is the only one that will do any good in Illinois. The man who has 6, 8, 10 or 15 colonies, and his bees are only a side issue, lets them stand. If they live, they live; if they die, they die. The neighbor's bees carry the disease home, and that is where you get foul brood. Then we want a law so that when we know a man has foul brood in his apiary we can have an inspector go and visit the yard and stamp it out. I do not believe it is necessary to destroy the hives, or anything of that kind. I believe my friend here, Mr. McEvoy, has destroyed many cases where he never destroyed a hive.

Mr. McEvoy—I never destroyed a hive in my life.

Mr. Kannenberg—Mr. France, in Wisconsin, has treated foul brood many times without destroying the hive. I shall hand in my name here to help along a foul-brood law down at Springfield. When we are working against a foul-brood law, we are working against our own interests.

Mr. McEvoy—A good many are acting on the proposition that we are trying to do something that we would have to force, which is not the case.

Mr. Holtermann—If you have a competent man you will have very little trouble. There may be a little opposition to him at first, but if he will take it right, it will end right, as a rule. I think you had better get a law passed; it will be to the interest of every man in the business, and the men who oppose it will be all right if you take them right. Whatever you do in your law, make the inspector the sole judge. No appeal! If an appeal can be made from the decision of the inspector, while that is going on the mischief will be done. Make the inspector the sole judge, and see that he does his duty.

Mr. Kannenberg—I should think a man who has a lot of bees, and makes his living out of them, would be only too glad if there is a compulsory law to keep out foul brood. Those who have only a few bees would not care whether they had it or not, but the man who makes his living out of bees should care whether his neighbors bring in foul brood.

Mr. Wheeler—That all comes along the line of absolute cure. When you convince the fellows in Illinois that you can cure that disease, then is the time to talk, and not until then. And another thing, we want absolutely straight, honorable men for our inspectors if we have to have them. We want men that we can trust. Our fortunes are at stake; our whole interests, our life's work, are at stake. We want men who will not go in and destroy our property for some notion or whim. We want property preserved. That is the law first taught in the Declaration of Independence—preservation of life, liberty and prop-

erty. And I hope we may sometime get a law that will work along that same line. When that day comes, I am in for it. But until you can prove that the disease is curable, I will not consent to it. Not only that, but this convention does not represent the bee-keepers of Illinois. Don't for one moment forget that. Don't forget that Illinois bee-keepers represent people all over the State, and about-nine-tenths of them never darken these doors—never come inside of this convention hall. They have their interests as well as we do, and I have heard nothing from them.

Mr. Baxter—I would like to ask Mr. Wheeler one question. Have you ever had foul brood in your own apiary?

Mr. Wheeler—I have not said anything at all of that kind. I have experimented in all sorts of ways, but I do not know that I am to be picked out individually here to answer any questions. I am not afraid to have anybody ask me outside. We do not know what the future has in store for any of us. You all talk about the question just as I do. I have had experience with it—a great deal of experience. I have tried these experiments, and I have followed directions, and I believe the time will come when you will all, every one of you, say that Wheeler is right. I expect I may not live to see it.

Mr. Ferris—There is a point in Mr. Wheeler's argument I see some light in. A man who is a would-be inspector, who went in and inspected some hives and pronounced them foul-broody, and afterward another inspector went in and told them it was pickled brood, there would be trouble. Unless we have a thoroughly competent man, a man's whole apiary might be destroyed under a compulsory law. And that is a point we must look after, so that a man does not go forth and destroy in the wrong place. We should have not only a man who can enforce the law, but have the right kind of a man when he is going to enforce it.

Mr. Whitney—I don't understand why we should appoint a man as inspector until after we get the law!

A motion was made and seconded that the Committee on Legislation be instructed to co-operate with the State Bee-Keepers' Association to secure a foul-brood law. Motion carried almost unanimously.

BABY NUCLEI IN QUEEN-REARING.

"What is the testimony in regard to the value of baby nuclei in queen-rearing?"

Ernest R. Root—There is no question but what baby nuclei will fertilize queens, small or large. The trouble is to get the bees to stay in the little boxes, so as not to keep renewing them all the time. We have been experimenting with the small boxes and find that it works, and fertilizes the queens, depending upon how many bees we get into the boxes. Instead of having very thick partitions, we have very thin ones. The frames are the same as in an

ordinary hive. The advantage in using 1-by nuclei is to keep from using smoke. We never use a smoker in handling baby nuclei. The fact about the matter is that the first brood will be reared right against the thin partition on both sides, showing that the additional warmth of the two clusters means a great deal. Instead of having six to the Langstroth frame, we now have three to that size frame, and we can run the baby nuclei in pairs clear up into the month of November.

Dr. Bohrer—How many frames do you have?

Mr. Root—Four; 2 to each division.

Dr. Miller—Mr. Root says these are renewed about once a month, but I think Mr. Laws and some other dyed-in-the-wool baby-nuclei men say they have a fresh lot of bees for each queen.

Mr. Root—That plan is all right, but it involves too much work for us down at Medina. As I understand it, he forms a baby nucleus every time he wants to carry the bees to the out yard. We have found it less work to use the baby nuclei to run through the entire season, like an ordinary colony.

Mr. Hutchinson—There is one point on which Mr. Ferris lays considerable emphasis, and that is the distance apart of the frames—that is, placing them wide apart. He says if there is a large space between them, more bees can crowd in there than can rear bees successfully.

Dr. Miller—May I emphasize the point that Mr. Hutchinson made right here as to the room that is there. A good many years ago, when I first commenced working with bees, I devised a nucleus hive, using a common 10-frame Langstroth hive, taking 6 nuclei, one in each frame, and it worked very well. Years after I tried to repeat the same thing, and I found what a great many authorities said, that the nuclei would be deserted; that the bees would desert them. When I made my second attempt at it, I was wiser then—knew more about bees, and rather smiled at my former ignorance in using 6 of them in that 10-frame hive, which gave a space of nearly 2 inches to each. I gave them, this time, only a reasonable amount, only about $\frac{1}{2}$ inch at the side of each one, and the bees flew out and would not stay in there! I concluded my first crude attempt was the better one. Another point: I do not think, after trying all these years and experimenting with baby nuclei, that this thing is quite as modern as some of us are likely to think. About 40 years ago I visited Adam Grimm, and I think about all of his hives were just about the size of the present baby-nucleus hives. And I remember his pulling them apart without any smoke. The things would fly at him, and he would say, "We must wait a little and then go at them again." That is about the size of Adam Grimm's nucleus hive [referring to a model].

Mr. Dadant—Mr. Gray, of Ohio, made baby nuclei. We reared our queens from the larvae instead of doing as you do to-day, but we did have some very good nuclei, and the question was to keep the combs well separated, so

as to have a large amount of bees between. When the honey would come, they would spread out.

Dr. Bohrer—Mr. Langstroth used 4 frames. I have been in his apiary a good many times. I never reinforce them. When they have filled every available space I remove the queen.

Mr. Stanley described at some length his method and baby-nucleus hive. His hive is a little larger than the ordinary baby-nucleus hives. It has 3 frames, 4x5 inches. He started with 6 combs in the spring, and then divided them later on.

Mr. Holtermann—Have you introduced a large number of virgin queens?

Mr. Stanley—Probably 1,200 to 1,500 the past season.

Mr. McCain—I wish I had the experience and ability to write a book entitled, "Forty Years Among the Bees." I do not believe this is right; I believe the system should be condemned. I think it is all wrong. I think it is unnatural, abnormal, forced from beginning to end. My experience is limited, but that is the way it looks to me.

Mr. Dadant—I do not believe we should condemn a system because it is forced. There are a great many things done by domesticating. We have changed the nature of a good many animals. I think the argument that the thing is not right because it is forced has no weight. I can see no reason why the queen should suffer, and I can see a saving in expense to the bee-keeper. I believe the boxes should be made so that none of the bees need be lost.

Mr. Root—Perhaps I can harmonize the differences of opinion. I do believe they are all right so far as mating the queens is concerned. We were moving on wrong lines. We had too few bees. It was said 100 would be enough. I believe it was wrong there. After we had prepared the article, in order to make the thing work, we went to 400. When we had about 400 it worked. Putting the frames further apart commends itself as being very good. When you get a ball of bees, it will be just as warm, whether large or small, up to a certain extent. The Pratt baby nucleus is, perhaps, no larger than those two boxes there. We can make it work by having one comb and putting more bees in it. I think if we should try it over again, we could do it. It is my belief that with a tin box, the results would be all right. I believe cells are liable to be chilled out in a box where a pasteboard cover is used. We make it just as warm as we can. The baby nucleus Pratt recommended had 8 frames to the Langstroth frame. That makes it too small. The frames we are now using give better results with 3 to the Langstroth frame. The virgin queens themselves should be reared in strong colonies, then when they have arrived at the right age we introduce them. We have to modify some of the things we thought we knew last year.

The new President of the National Bee-Keepers' Association, Mr. C. P. Dadant, was introduced to the convention, and responded.

Mr. Dadant—Mr. President, I will have to make an extempore speech, but I have not prepared it! I simply wish to thank the bee-keepers for my election. I am afraid I will turn out to be a very poor presiding officer, but I will do the best I can. I am not a speaker, therefore, you will not expect a speech from me. I leave speaking to better men than myself.

Mr. George E. Hilton, the newly elected Vice-President of the National Association, was called for, but had left the hall.

Mr. W. Z. Hutchinson, Secretary of the National, was introduced to the convention and responded:

Mr. President, there seems to be a lot of poor talkers. I can only say as my brother has said, I thank the bee-keepers for the honor.

The General Manager, Mr. N. E. France, was also introduced.

Mr. France—As Mr. Dadant has said, I thank the bee-keepers for the honor. I have tried to do what is right for them, and hope to continue so doing. There are some things connected with the work that are pleasant. Again, there are some parts of it that I wish somebody else had. But put it all together, we are progressing, and we are accomplishing much of good. I hope you will all feel it is your part to help. One officer cannot do it alone.

Pres. York—We have with us Dr. Eaton, analyst of the Illinois State Food Commission.

Dr. Eaton—As I expect to read a paper before the National Association, I will not have anything to say at the present time, except to congratulate the bee-keepers on the market for honey as regards adulteration; especially as regards extracted honey, because we have hardly found a sample of adulterated honey in Illinois this year.

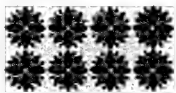
Pres. York—I have not succeeded in getting anyone to talk very much, and so will call on Dr. Miller.

Dr. Miller—I am not an officer, and I can talk.

Pres. York—You are still a Director of the National, and will be until January 1st.

Dr. Miller—Well, I can talk until January 1st, then.

The convention then adjourned to meet at the call of the Executive Committee.



REPORT

—OF THE—

National Bee-Keepers' Association

The National Bee-Keepers' Association held its Annual Convention in Brunt Hall in the Bush Temple of Music, Chicago, Ill., on Tuesday, Wednesday and Thursday, December 19, 20 and 21, 1905.

The opening session took place on Tuesday, December 19, at 7:30 o'clock p. m.; the President-elect, Mr. C. P. Dadant, of Hamilton, Ill., occupied the chair.

The Secretary, Mr. W. Z. Hutchinson, read a paper written by Mr. L. Stachelhausen, of Converse, Texas, on

THE CONTROL OF INCREASE

The natural way of increase is swarming, and, therefore, the first problem is control of swarming, and this is very important for bee-keepers who keep a large number of colonies in several apiaries. As we have no man in the out-yards to watch for swarms, and as it would not pay at all to keep such a person there during swarming-time, every swarm cast by any colony would be very probably lost.

I am tempted to give you a scientific talk about the cause of swarming, but I think you prefer more practical hints. We know a number of ways to prevent swarming; one of the most practical ways to prevent, or, at least, to delay swarming, is to use large hives; that is, a large comb-surface, by which the bees can extend the brood-nest in every direction. At the same time colonies in such large hives will develop faster during the spring, and become stronger colonies. We can force such a development in smaller hives by spreading the brood and other laborious and dangerous manipulations. In a large hive with plenty of honey a healthy colony will develop to the greatest possible strength without any manipulation made by the bee-keeper.

It may be said that such large hives do not always, and under all circumstances, prevent swarming. This is true, but I have observed, if, in an apiary, 10-frame Langstroth hives are changed to larger ones, the bees will swarm less by and by every year. In my locality the bees from hives not larger than 8 or 10 Langstroth frames will swarm so much that one man could hardly manage an apiary of 100 colonies. I could tell you stories about the ways some of my bee-keeping neighbors acted to get rid of these surplus swarms. For about 24 years I have used

larger hives, and have no trouble of this kind any more. This is a very important difference, if bees shall be kept in as many colonies to make a profit-bearing business.

In my locality the problem is to keep the bees from swarming till the main honey-flow commences. During this flow the bees will not swarm, if they have not made preparations for it before this flow commenced. With such cir-



C. P. DADANT,

President National Bee-Keepers' Association.

cumstances, hives as large as the Dadant hive will prevent swarming sufficiently in most years. In other years, which are more favorable for brood-rearing, I have to watch my colonies more carefully. If I find a very strong colony with brood much extended, I have to manipulate it, especially if I find queen-cells started. It may be sent down as a rule, if we find 2500 square inches of comb-surface occupied by brood, this colony will probably swarm soon, even from a very large hive.

The prevention of swarming may have different purposes. If we can't, or are not willing, to watch our colonies during swarming-time, we can make the swarms artificially a little earlier; thus they would swarm naturally, but in this case we will get as much, or even more, increase. If we want less increase, we make only so many artificial swarms as we think necessary to prevent natural swarms. Or we may not want any increase at all, and wish to keep the whole force of a colony together and have it as strong as possible during the honey-flow. For this reason we have to select different ways for prevention of swarming. If we make swarms artificially, we can make one or more swarms from every colony strong enough, or we make one swarm from two such colonies, or we take the material to form a new swarm from a larger number of colonies. All this is done for a permanent increase. A second way is, when no increase is wanted, to divide a strong colony for some days only, and when the swarming fever has past, we unite these two colonies again. A third way is to manipulate the colony in such a way without dividing it, that it will not or can't swarm. We will consider these three ways.

There are, again, many different ways of artificial swarming. During many years I used the well-known plan to make three out of two. A strong colony, A, is shaken into a new hive with starters or full sheets of foundation, and this hive is set on the old stand of A. The brood-combs without bees are placed in another hive, and this is set on the stand of another strong colony B, and the colony B receives a new stand C. To the colony now at B a queen fertilized, or virgin, or even a queen-cell, is introduced. If the honey-flow is good and of long duration this plan can be used with profit, but the colony at B is in a bad condition for some days, having no young bees to feed the larvæ, a part of them may starve and be drawn out afterwards. The colony C has lost all the field-bees, and if the hive does not contain very thin, watery honey, the young bees can't prepare the necessary larval-food, and some of the young brood is lost again, except we give some water to this colony in some way till some of the young bees will fly out to gather this water outside.

Since a few years I prefer for these reasons, another plan, especially recommendable if we want very little increase. I take from a colony, which I expect would make preparation to swarm, 3 or 4 brood-combs (3 of my frames have not quite as much comb-surface as 2 Langstroth frames). The bees from these combs are shaken back into their hive. In place of these brood-combs empty combs or frames with full sheets of foundation are given to this colony. Eight of these brood-combs from different colonies are set in another story, and 2 empty combs added; this story is set on top of another strong colony over a queen-excluding honey-board. In this way I go through the yard till all the colonies strong enough are managed. In about 2 or 3 hours these brood-combs over the excluders will be covered with young bees, and now I remove them again.

Two such stories with brood and bees from 2 different colonies will form a new colony, which is placed on a new stand, a queen in a cage closed with candy is introduced, and at the beginning of the honey-flow one or more supers are given to this colony and this bee-yard is safe for 10 days, at least.

The advantage of this plan is, that the colonies are weakened not more than necessary to prevent swarming, and the new colonies are at once ready to store honey. Hereby, it is important that we take mostly capped brood from the colonies, and that we give the frames of foundation at the proper place. Our purpose is that this foundation should be drawn out and eggs laid in these cells at once by the queen, therefore they must be given at such a place, where the queen is laying eggs in the center of the comb, or will soon do so. If we have taken away combs, in which some young bees are gnawing out of the cells, just in the center of these combs, we can put the foundation right in their place, because in a few days the queen would lay eggs there anyhow. If this cannot be done, a safe way is to remove the remaining brood in the old colony close together, and to give the foundation on both sides of the brood-nest between the last brood-comb and that comb containing mostly pollen, which generally is found on both sides of the brood-nest. If this is not observed, and we examine the colony 10 days later, we may find these combs filled with honey instead of with brood, and this will be a hindrance for the queen all the summer through. Many other ways of artificial swarming can be used, too many to be mentioned here.

The second way to prevent swarming is to divide a colony, which will probably swarm very soon, or has already started queen-cells, for a few days only, and to have that part of the colony which receives the brood-combs with the queen cells weakened so much in bees, that these surplus queen-cells are destroyed by the bees themselves. As soon as this is done both colonies are united again. This can be done in different ways.

1. The old colony is removed from its stand and a new hive containing some empty combs and some frames with starters is set on its place. From the old colony is taken 1 brood-comb with 1 or more queen cells and placed between 2 empty combs in the new hive on the old stand. By shaking or brushing, more bees from the old colony are added to this swarm, being careful not to get the queen in with the bees. The supers are given to this swarm on the old stand, and the parent colony, having the old queen, is set to one side or on top of this swarm. By this manipulation the parent colony is weakened so much that it gives up all swarming and will destroy the queen-cells. This generally takes place in less than 6 days, and now both colonies are re-united. The queen-cells on this 1 frame of brood are cut out, the brood-comb set back into the old colony, the new hive is removed and the parent colony set

back on the old stand. This plan was lately recommended in the United States and called "the Sibbald plan."

2. Another way of this kind is known as the "shook-swarm system." From a strong colony nearly all of the bees with the old queen are shaken or brushed into a new hive with starters or foundation, and this is set on the old stand. The old hive with the brood-combs and a sufficient number of bees to cover and nurse the brood is set to one side of the swarm. For reuniting we wait till the brood has hatched from the old brood-combs and unite the young bees with the swarm by setting the old colony to the other side of the swarm 10 days later. In 10 or 11 days afterwards all the brood of the old colony will have hatched and now we shake all the bees from this colony in front of the swarm.

When we make the shaken swarm we can give one or two brood-combs or none at all; we can give to the swarm empty combs, full sheets of foundation or starters only; all this depends on circumstances. I used this shook-swarm system for producing section-honey and I will tell you how I planned it out. My experience was, that I could not get a satisfactory crop of section-honey, if I had given the section-supers to an old colony in a 10-frame Langstroth, or a still larger hive.

About 18 years ago W. Z. Hutchinson recommended in a little book, "The Production of Comb Honey," for this purpose the use of swarms, which were hived in a contracted brood-chamber containing starters only. Since then I have used swarms only for the production of section-honey, and worked all the other colonies for extracted honey. Using large brood-nests I got less swarms every year and made them artificially by shaking the bees off from the combs, manipulating these swarms exactly as recommended in this little book. Such shaken swarms always worked just as well as natural swarms—even better, as they were generally stronger.

The only disadvantage of these natural or shaken swarms is, that they are getting weaker every day during the first 3 weeks, and more bees are necessary by and by for nursing the increasing brood. To avoid this I used Heddon's plan for preventing after-swarms, by changing the place of the parent colony and so drawing some bees from it to the swarm every 8 or 10 days. It does not change the principle, if this drawing of bees from one colony to the other is performed in some other way.

Some bee-keepers claim that shaken swarms should not be made, except a colony has started queen-cells. This is not so, if a large brood-chamber is used, but it is necessary that the colony be as strong as possible and have many young bees. The starting of queen-cells is a sign that a surplus of young bees compared with the open brood is present in a colony! in a large hive so much brood may be present, that no such surplus of young bees may appear, nevertheless more of them will be in the hive than in another, smaller hive, which has queen-cells. When the shaken swarm is made, this

open brood is removed, and we have exactly the same condition as with a natural swarm.

Further, in criticising this plan it is said, that the swarm has to build a new brood-nest, which causes a larger consumption of honey, which honey would better be stored in the sections. But such swarms work with more vigor than a colony which is nearly in a condition to make preparations to swarm; as no combs are in the contracted brood-chamber all the honey gathered is forced into the sections, which contain full sheets of foundation, and some of them partly drawn out. These circumstances overbalance the necessary building of new combs.

In my opinion, the most satisfactory way of producing section honey is to use large brood-chambers in the spring, and when the main honey-flow commences the colonies are managed after this shook-swarm system. This is especially true, if all natural swarms must be avoided.

3. This building of new combs can be avoided in the following way: A shaken swarm is made on the old stand, with the old queen, and the parent colony is set to one side or on top of this swarm. As soon as one of the young queens has hatched and has destroyed the other queen-cells in the parent colony, both colonies are reunited. If the old queen shall be kept, it is not necessary to hunt up the young queen in the parent colony. At evening, before the bees cease to fly, we exchange the places of the two colonies for about an hour, and any field-bees from the swarm will enter the parent colony; now the hives change places again, when the bees are not flying any more. These field-bees are used to an old queen, and will, during the night, kill the young virgin queen. The next morning both colonies are united again. If the young queen shall be kept and the old one removed, the best way would be to wait till the young queen is fertilized, then the old queen is found, removed, and both colonies united.

In this way no new brood-nest is to be built, and the colony is divided during a few days only, the swarming impulse is removed, and the bees themselves have destroyed the queen-cells; but the plan will hardly work for section honey, and the same I think can be said about the Sibbald plan. In both cases the brood-nest, after reuniting, will contain too many empty cells, which will at once be filled with honey.

Now we have to consider the third way of preventing swarms by preparing the colony in such a way, that it will not or can't swarm.

Here may be mentioned the different plans, by which the queen is prevented from swarming out, in a mechanical way, as by the use of a queen-excluding honey-board or a queen-trap, or by caging the queen for some time. These plans are quite against the nature of the bees, and have generally proven unsatisfactory. We can remove the old queen entirely and allow the colony to rear a young one. This plan will prevent swarming, if at the right time the surplus queen-cells are destroyed, but the colony is weakened considerably, probably more so than if a prime swarm and no

after-swarm were allowed. The plan takes too much work and attention to be practical in a large apiary.

Another way of this kind has been known for some time, but is not mentioned very often. When queen-cells are reared in an upper story, over an excluder, it was observed that such colonies did not swarm as long as there is some brood in this upper story. If this is true, it is plain that swarming can be prevented, if once in a while some brood-combs are removed from the lower story to the upper one over this excluder. This idea can be used for section honey, if a divisible brood-chamber is used. When the honey-flow commences, the upper part of this brood-chamber is removed, a queen-excluder laid on top of the lower part, over this one or more section supers and on top of them the upper part of the brood-chamber. The upper brood-story is kept on the hive till all the brood has hatched and the combs are filled with honey, then these combs are extracted or used for winter food in the same or another hive.

Against this plan I have only this objection, that the queen-excluder is a considerable hindrance for the bees, but I think in many cases, when section honey shall be produced, it can be dispensed with, as the section-supers themselves have probably the same effect as the queen-excluder.

Another plan is described by Dr. C. C. Miller, and called the "foundation plan." When in a colony queen-cells are found with eggs in them, these eggs are destroyed; if, 10 days later, larvæ are found in queen-cells, the queen is found and caged and all the queen-cells destroyed, the hive removed and in its place is put a hive containing three frames of foundation. Upon this hive is put an excluder and over the excluder the old hive, with brood and bees, and over this the supers. The queen is run in at the entrance of the lower hive and the colony is left for a week or 10 days. At the end of this time the lower story is taken away with the excluder, and the queen is put back in the old hive, which gets the old stand.

This is a modification of the last-described plan. I have never tried this plan, but it seems to me, that in some localities, the colony may swarm after treatment, and that the examination of all colonies every 8 or 10 days to destroy the eggs in queen-cells or to treat the colony, if larvæ are present, will take too much time and labor.

Another way belonging to this class is "Simmins' non-swarming system." It is said that the bees will not swarm, if an empty space is given to them between the brood-nest and the alighting hole, in which the bees can build combs. Simmins says that an important item in this management consists in supplying every section with fully worked combs. As this is hardly possible in a large apiary worked exclusively for comb-honey, this may be the reason that the plan was not favorably accepted on this side of the Atlantic. You will see that this principle is partially employed in Dr. Miller's foundation plan.

L. STACHELHAUSEN.

The President declared the paper open for discussion.
Mr. McEvoy—One point in the paper read was as to shak-

ing bees onto comb. Some people complain that these colonies would grow weak in a few days after, but my plan is to put a cone bee-escape across the front after 5 or 6 days for a few hours; the bees come out and they cannot get back into it again. Then you can send your bees where you want to. Another point is that the queen destroys the young queens because the guards are off the cells. The first queen that hatches will do it.

Mr. Holtermann—I think that the subject that we have here tonight is one of the most important subjects that is going to be brought before the convention, that is, the control of increase. We have had different methods given to us. The paper I think is a very good one and very exhaustive. I think that there is a method which can be given in addition to what has been here. Some 4 or 5 years ago I began bee-keeping again, and the writings of the Dadants had made quite an impression upon me, for I always looked upon them as very successful bee-keepers, and good, sound reasoners; and their observations led me to adopt a larger hive. I had been a strong advocate of the 8-frame Langstroth hive up to that time, and I adopted a 12-frame Langstroth hive. What Mr. Stachelhausen says is correct. I think the basis or the beginning of the successful control of increase is large colonies. Now, there are several features which come into play in the control of increase. First of all, the general impression is that the time to note the swarming impulse is when eggs are deposited in the queen-cell cups. I think in that practice we make a mistake. I think the first indication towards swarming is the drone-brood; but we will leave that alone because in a great many cases they may not swarm at all. But the next is when cell-cups are built. I have had men say to me, "I see cell-cups built in many cases and no swarming." That is true. The conditions may change, and so on, so that they will not swarm when cell-cups are built, but that is the very reason why we should note that. In my manipulation in the apiary when I see cell-cups built I take it as a hint that the bees are drifting very closely towards swarming, and that is the time, in my estimation, that the brood should be taken out, if at all, unless you are approaching, as far as you can tell, the close of the honey season, and then you do not need to do that.

The next point I find, and I think where bee-keepers make such very great mistakes, is in the amount of super-room given to the bees. I don't know how it is over here, perhaps, as fully as it is in Canada. But the general method is to give an extracting super to a colony of bees. I am satisfied as long as we think we can run our bees successfully with only one super, so long we will not make the most out of our bees, or succeed in keeping down swarming to the greatest extent. No one should think of taking extracted honey without having at least an average of 2 supers to the hive.

Then there is the matter of ventilation. I would like to take you into a frame building on a hot summer day with a $\frac{7}{8}$ -inch board roof, and very little ventilation, and put you at work extracting; and yet there are nine-tenths of the

bee-keepers who consider it economy to have half that, and have no more protection than that $\frac{7}{8}$ -inch board; and they have what is equal to a stove in addition in that building in the young bees and brood in the hive. I consider it a very gross extravagance to use a hive with as little as a $\frac{7}{8}$ -inch board protection. We should protect them more.

Next, in order to keep down swarming I am going to try to show you the importance of ventilators in the supers. You have a colony of bees there, and all the fresh air they can get has to come through that brood-chamber and up into the super; by the time it reaches the super that air is foul, and your bees on that account become discontented and want to swarm, and therefore I use the system of ventilation with supers. A great many of the entrances to hives are too small. In our country we have hives in which the entrance does not go all the way across the front of the hive. I learned a lesson from Mr. S. T. Pettit, to enlarge the entrance of the hive during the warm season by means of wedges $\frac{7}{8}$ of an inch at the front and going to a point at the back, and as soon as the swarming-time comes on slide one between the bottom-board and the brood-chamber, and in that way increase the entrances $\frac{7}{8}$ of an inch. By those methods we can keep down swarming to a great extent. In using the greater amount of super-room, you want to get the condition where you have sufficient super-room in your hive that the worker force in that hive is contented, and in such numbers that the bees that are dying off from day to day are about equal to the number of bees that are coming on. You can't do that unless you have the extra amount of super-room.

The reason why I have said I consider this perhaps the most important subject that will come before this convention is this: I am thoroughly satisfied that the secret of large yields of honey is to keep the bees together. No matter whether your honey-flow is short or long, it makes no difference so far as I can see it as to that point. Your bees then are always ready; your bees come with large forces, and they can take advantage of everything that may turn up, no matter whether it is clover, basswood or buckwheat—whatever gives you the largest amount of yield.

As far as fall flows are concerned, I know by observation that a great many do not get the amount of honey they could in the fall of the year, because by that time their colonies are so broken up they really have few, if any, strong colonies left.

Dr. Miller—When you speak of ventilating supers, do you mean extracting supers, or sections, or both?

Mr. Holtermann—I have particular reference to extracting supers. The only method I can see of ventilating the comb-honey supers is by having a ventilator at the top of the brood-chamber. I don't think it is practicable to use them in comb-honey supers at the time when the bees are capping the honey.

Mr. Nau—I work the super in the same way Mr. Holtermann does, and I have no swarms. I have a 13-frame Langstroth hive, and whenever one super is half full I put

another under it. I get as high as 6 supers full of honey off one hive.

Dr. Miller—I would like to emphasize the point that is made by Mr. Holtermann, and that is as to the importance of ventilation. I have had from year to year what I call "piles," that is, piling them up 3 or 4 stories high, and allowing each colony to have an abundance of ventilation; in other words, the full entrance to each story. I never had one of these piles swarm. I wouldn't like to say that will always be a certain preventive of swarming, from the fact that these piles were generally formed from what were rather weak colonies in the first place, and built up gradually to very strong ones. The ventilation of the colony can always be made a success with extracting supers, as Mr. Holtermann says; and I have wondered many a time why men working for extracted honey did not have a current of air running right up through the whole thing. Mr. Holtermann says that by having the air come out through the brood-chamber but not through the supers will work for section-honey. A good many years ago, before any such thing as sections were known, I was in the apiary of Adam Grimm, of Wisconsin—he was working at that time for comb honey, and had little boxes upon his hives and over them a telescope cover, and the day I was there, he was raising up these covers and blocking them up a little so that the air could get up through the brood-chamber, and I remember, with his very emphatic German way of saying things, he turned to me and said, "I consider that very important." From that time on for a number of years I had that same kind of ventilation. But I want to tell Mr. Holtermann this, that in the upper part of the story, all of the sections near that will be much slower in completion than the others, and that is the objection to it. I am dreaming some time of having a kind of way of ventilating the super sections right up through the center. In some such way I would like to have the advantage of the ventilation and still hold on to the sections. But in the matter of ventilation when working for extracted honey, I believe you have the key of the whole situation; I don't believe you need have much swarming there at all.

Mr. Holtermann—You know why that is, Dr. Miller!

Dr. Miller—No, I don't.

Mr. Holtermann—The impression I had at one time was that if I made an opening at the top of the hive the air would go in at the front and come out of the top, but the fact of the matter is you will find that the air is drawn in at the top. That air is cool when it first strikes the hive, comparatively, and it has not been raised to the temperature necessary for that evaporation to go on, and therefore in using ventilators in comb-honey supers there is the tendency for the bees not to cap as readily there as in other places, because it does not ripen as rapidly.

Mr. Taylor—Will not bees carry the honey out there, too, as well as not cap?

Mr. Holtermann—There may be a tendency for them to do that because they can't ripen it as well.

Mr. Taylor—The ventilation would help to ripen, if anything, and they would not carry the honey out.

Mr. Holtermann—If the temperature outside is 80 degrees and the hive temperature is nearly 100, the temperature of the air when it first enters the hive has to be raised to the inside temperature by the bees.

Mr. Taylor—That is in the shade. But out in the apiary it is generally as hot outside as it is inside.

Mr. Holtermann—It is night and day.

Mr. Taylor—The reason I have given for that is, that the bees to guard their honey will carry it away from an opening for fear of robbing.

Dr. Bohrer—The question under discussion is not a new one. Mr. R. C. Otis once put this question to me: "Why do bees swarm at all?" The reply was that it is their nature to. It applies to the honey-bee as well as every other department of the animal kingdom—to propagate their species. There are two things that come as near controlling it as anything—one is when there is an abundant flow of honey, provided you give them room. I think the first movable hive I made had 18 frames, and I had one of the largest swarms I ever had come out of that hive. I never had a swarm cast where bees were hived in sugar hogsheads. And I have never seen swarms cast from an old-fashioned salt-barrel, or any receptacle of that kind. Take a large hive and give them abundance of room, and if the honey-flow is abundant they will work at that and not have much swarming, but give them small hives and they begin to give trouble. At the present time I can't think of any plan that will effectually prevent swarming.

Mr. Holtermann—Isn't the reason because they are confined in those hives during the daytime and they are comparatively warm and the ventilation is not proper?

Mr. Taylor—I would like to ask a question of Mr. Holtermann. He spoke of looking for the starting of queen-cell cups. Are there no cups left over from the previous year in your hives?

Mr. Holtermann—There are cups, but I don't think anyone would mistake this year's cups. There is a very distinct difference. If those cups are there, and you expect a honey season ahead of you, that is the time you should deal with the swarming matter. When they begin to put brood and larvæ and eggs in the queen-cells, in my estimation you have gone a step too far to prevent the swarming without a serious breaking up of your colony. To protect your colonies temporarily requires a great deal of labor, and a good many extra hives.

Mr. Baxter—Hunting for cups is too much work for me. I have found by 25 years' experience that there is an absolute rule to prevent swarming, and that rule is to have large hives and see they have room which, without giving any other ventilation, gives them ventilation. But under certain conditions that is not enough. I want ventilation from below—I don't want it from above. It is sufficient if you raise a hive about $\frac{7}{8}$ of an inch above the

bottom-board. I have hives, some of which could be raised, and some could not be, and no matter how many supers I put on top of those movable bottoms, when the weather became warm they would swarm anyway; but where I raised the hives from the bottom and gave them sufficient room above I have never had any trouble with swarms; and I have had as many as 250 colonies.

Mr. Holtermann—What is the length of your honey-flow?

Mr. Baxter—It begins about the first of June and ends the middle of July, and occasionally in the last of September or the beginning of October. It is for extracted honey. I wouldn't bother with comb-honey; I have tried it long enough.

Dr. Miller—In my locality, working for section honey, raising up the hive will help, but it won't prevent swarming; a whole lot of them will swarm. With reference to this matter of the size of hives, I believe in that general rule, and if I didn't believe in any other wise I would because of the testimony of the men I believe in so thoroughly as I do the Dadants; and yet in my locality that does not work as I would like it to. One year I got 2 of the Jumbo hives, deep frames—10 frames—and deeper than the Langstroth, and I was going to have that, and have nothing else if those things didn't swarm. The next spring after they were filled, the very first colony that swarmed was one of those Jumbos.

Mr. Bohrer—With regard to ventilation, that big salt-barrel had no upward ventilation, but it had lots from below. In addition to Dr. Miller's trouble I had lumbago in handling the same hive.

Mr. Holtermann—What did you put in the supers of those Jumbo hives?

Dr. Miller—The same as I did in the others.

Mr. Holtermann—Dronecomb?

Dr. Miller—No, sections with foundation. I am not sure whether they waited until I had the supers on.

Mr. Ferris—There is nothing I have studied more than the question of producing the most brood from the least number of bees I winter, and getting the most honey from them. To keep them entirely from producing any swarms until after the flow is over, I divide them at my will. I use both 10-frame Langstroth and a special hive which holds 14 Langstroth frames, $21\frac{1}{4} \times 21\frac{1}{4}$, and a division-board through the center. This makes a large hive. Provide that through the center with a solid division-board which is removable, place a queen in the fall on each side of that division-board. I winter 2 queens in an ordinary colony of bees in this hive. Then in the spring I work each division up to 7 frames full of brood. Then I add on another story, and as each story has a place for the division-board, I put in a division-board, and in that way I get both sides worked up to an exceedingly strong colony in brood, up to the time when the honey-flow begins. At this point I take away both queens, and let them be a few days queenless, and then either give them a capped queen-cell or a queen already mated. In

this way you can prevent swarming, I think, as well as in any other way. An old queen will swarm quicker than a young one, and by following this method you get enormous swarms. I get, with a 10-frame Langstroth, 4 stories full of bees by June 17, and not one of those colonies ever yet cast a swarm. And while others are not getting a pound of surplus in my locality, they yield me 200 pounds of comb or extracted.

I can endorse what has been said about ventilation. You need considerable of it. For extracted honey, upward ventilation with a hole at the back of each side about $\frac{3}{4}$ of an inch is a good thing. It will keep them from clustering on the outside. I had one swarm at one time 5 stories high, and it was crammed full of bees at night so that they had a cluster as big as the size of a hat; there would be half a bushel on the outside. That swarm of bees filled 5 stories full of honey in 7 days, except the brood-nest. Three or four manipulations are practically all that is necessary up to the time of the honey-flow, and yet will entirely control swarming.

Pres. Dadant—In how many colonies did you try this, Mr. Ferris—I had 25.

Mr. Rice—When you remove the queens and division-boards do you unite them?

Mr. Ferris—Yes. At the end of the flow I supply them with another queen besides the one they have.

Mr. Rice—What do you do with the old queens?

Mr. Ferris—I kill them. I have no use for queens that are over a year old.

Dr. Miller—You consider this practical, uniting two colonies?

Mr. Ferris—Yes. But really you only have one to deal with all the way through.

Mr. Baxter—I would like to be understood on this matter of ventilation. I have holes at the back of my hives also, but then that is simply to ventilate around the super and the top of the super. There is no draught from the lower part of the hive through the hive and out through this hole. I have an oilcloth over it which makes it perfectly tight. If there happens to be a hole in the cloth the bees will not store honey near that hole. You can see from that it is a detriment to have a draught through the supers. But I do believe in having ventilation around and from below.

Mr. Holtermann—I want to say, most emphatically, I have got at least 300 of these ventilators, only I think I have a better way than to bore a hole of that size. I have an opening of about $\frac{3}{8}$ of an inch in depth right across the hive. I have no difficulty whatever in having the bees store honey next to these ventilators.

Pres. Dadant—It is a fact that where there is a hole in the oilcloth, even if there is a straw mat such as we use on top of the frames, there is a slight amount of ventilation there, and the bees put less honey at that spot.

Mr. Ferris—Bees that are queenless will go into the supers quicker than bees that have a queen. That is one reason why I advocate taking away the queens at this period,

at the commencement of the honey-flow. You can control swarming at the commencement by giving the queen room to lay. But after the honey-flow commences they will enter the honey-sections more readily if they are queenless for the first 3 or 4 days than they will if they have a queen. I use no more bees to winter than you would winter ordinarily in a 10-frame hive.

Mr. McEvoy—Did I understand this gentleman to say that he uses 14 frames in a brood chamber, and the brood is all in the brood-chamber, and an excluder on?

Mr. Ferris—I always confine the queen below. In our locality we will have all the lower frames filled with pollen. I have seen it time after time; if we allow our queens to run at random through the hive without an excluder, they will store the first story full of pollen; the next will be a brood nest, and the honey on top of all.

Mr. McEvoy—I see by the papers that they all advocate large brood-chambers. I have only a medium-size, and yet I rear more brood than the most of them, because I go in, as a rule, for pretty near 18 frames. I put the queen above, and then I clip off at certain periods, and I leave that brood afterwards, and in 9 days it is capped. I let them swarm and come out with an immense lot of bees. From my point of view I don't want too much super-room, because I can get better ripened honey, and a finer quality, and less swarms.

Mr. Ferris—I get 30 frames of brood instead of 18 by June 15 to June 18.

Mr. McEvoy—I understand you to have had the 14 frames just below?

Mr. Ferris—No, I keep tiering them up until the flow begins; I let the queen have full range until the flow.

Mr. McEvoy—All right. I agree with you. That is the best thing I have heard yet.

Mr. Bartz—It is not advisable to mix the two matters, comb and extracted honey, the way you are doing. They are different matters, and require different treatment. I would like if each method were treated separately. Most bee-keepers can control increase when running for extracted honey, but the difficulty seems to be with comb honey.

Mr. Taylor—The trouble, I think, is that these people who control swarming are producing extracted honey, and those who produce comb honey cannot control swarming. That is the reason they don't discuss it so much.

Mr. Ferris—There is a question I want to ask. Take these supers, no matter what size section we use, and extracting frames, so that you can put an extracting frame all drawn out with nice white comb in it on the outside of each side of the super, and in these large cases put one in the middle. When you put that on, the outside will be filled first instead of the center of the hive, and then the super will be capped more evenly all over. Are there others trying that method in different localities?

Mr. McEvoy—Yes; that will work in all localities.

Mr. Ferris—We know our poorest sections are almost invariably on the outside of the super, and by getting those

capped first we produce a small quantity of extracted honey and the bulk of it in comb.

Mr. Jackson—When you have both your queens in the bottom-brood-chamber and allow them full range, how do you keep them apart? If your brood-frames drop, can they get together?

Mr. Ferris—My 10-frame hive has a solid partition that goes clear to the bottom, and they meet, so that when I put the one story on top of the other the division-boards sit tight, and I lay a cloth over the top.

Mr. Hatch—I think we are losing sight of one point mentioned here, the influence of drones in casting swarms. In my observation a colony will never cast a swarm unless there are some drones present. Another idea was, we should look for drone-comb as well as queen-cups. I know one of the most successful bee-keepers that uses small hives, 12 inches square and 7 inches deep. He starts in the spring with one section and then puts on another section. He is very careful to have nothing but worker-comb in any of his frames. As the honey season advances he goes and pries the top hive off and he says, "There is some drone-comb; they are preparing for swarming." He scrapes that off and puts an empty section between them, and they are fixed for 10 days; that colony won't swarm. He didn't look for queen-cells.

Swarming is an indication of vigor, and strength, and power. The point is not to stop that, but to turn it in the right direction. Just merely controlling increase is not what we are after. We want to control it in such a way that we shall not lose our honey crop, or diminish it. I have tried a good many ways, and I have never yet found one solitary way that was controlling the increase but what was at the expense of the honey. I have tried the plan of caging the queen on 2 frames and she will sulk, and wear herself to death, and when you release her again it will only be a few days before she will be superseded. I have tried shaking the bees off onto comb, and onto full foundation, but with the same result. I would rather pay a man \$5.00 a day to sit in my apiary and watch for swarms and hive them, than to try any plan of controlling increase that I have discovered yet.

Mr. Holtermann—I very emphatically oppose any method which forces the bees not to swarm. As Mr. Hatch has said, direct their energies in the direction of producing honey.

Mr. Hatch—Do you think it is possible for a colony to swarm without any drones being present in the hive?

Mr. Bratz—I have had them swarm without.

Mr. Holtermann—I don't think that any man is in a position to say that there is actually not a drone present in the hive.

Mr. Hershiser—I have had bees swarm quite frequently without drones when I set them out in the spring.

Mr. Aspinwall—I received a challenge from Mr. Taylor just now, that we hadn't heard from the comb-honey man. But as I am set down for a talk on the non-swarming hive

I thought it best not to say anything. I am working on a different line. I agree with Mr. Holtermann in respect to the queen-cells, rudimentary ones that are new in the spring—the old ones are cut down. In the matter of drones I have tried with artificial comb, and that factor is one that produces swarms, but there are a great many factors that enter into and constitute the swarming impulse. If we remove one of them, that is a help; but in an apiary of a number of colonies drones will intermingle quite frequently, and for that reason drone-comb is a troublesome expense.

When you come to size it up there has been quite a conglomeration here. What is the young bee-keeper to do when he leaves this session? Next season will he adopt any of these plans, and can you guarantee him success? We want a hive, or we want a system, that will control swarming during the production of comb honey, and then we have got it without doubt for the extracted, and that is the point at which I am laboring. Dr. Miller has been for years working on a non-swarming system in producing comb honey. That is what we are after. We must not have manipulation that will tamper with the natural workings of the colony. So sure as we remove the queen, so sure as we cut the queen-cells out, so sure as we divide, we are placing the colony in an abnormal condition. Isn't that right, Dr. Miller?

Dr. Miller—Not fully.

Mr. Aspinwall—You have placed them in a desperate condition. The removal of the queen does not necessarily compel them to make as many queen-cells as when you have thwarted the swarming by removing the cells only.

There is another point in regard to controlling swarming that has been mentioned here, and that is in reference to the numerous methods set forth in the paper. No one of those methods prevents swarming to the fullest extent. It controls the evil or bane of bee-keeping to a certain extent only. As the writer admitted, there was no one system that could be wholly relied upon. You will pardon me for taking the stand that it must be done mechanically, as well as by the system adopted in connection with it. I know the bee-keeping world is working on another plan, and decries the principle of a hive that will control swarming. I recollect very well in the days of Quinby, Mr. Hazen, who experimented quite largely, lived in my neighborhood. Professor Cook refers to him as making an effort to control swarming by a non-swarming hive, and he offered such a hive to Mr. Quinby with whom I was well acquainted.

The matter of giving sufficient room is another factor, and that is what Mr. Hazen did, simply giving surplus room on all sides and the top, the hive in other respects remaining the same. I don't care how much room you give a colony so long as there are 6 to 14 combs, as the case may be; the bees may make rapid increase with a fertile queen or otherwise; when those combs are filled any outside appliances for room will not compel them to leave that brood-nest, until they are compelled to by the honey-flow. During that time the brood-nest is overcrowded, and the

result, in many instances, no matter what the room is, such a season as last season, notably in my location, would be to have a great number of swarms. In my locality the impulse was something enormous, one-third of my queens being mated with black drones last season.

Dr. Miller—As to cutting off the cells, there was a time when I most thoroughly believed the cutting of cells didn't have any effect at all. Now actual practice and trial have made me change my views, until I know that in many cases the destruction of cells will stop the swarming. Sometimes it would be just the destruction of cells once in the season, and sometimes the second time would do it, other times not. There are so many exceptions to that case, and all I cared for was to have the actual truth known about it. Here will be 50 colonies and in all of them the cells will be destroyed; perhaps in 10 of them there will be no swarming, and perhaps in 40 of them there will be.

At this stage Mr. Aspinwall was requested to address the Convention on the subject of

WHAT HAVE WE TO HOPE FOR FROM THE NON-SWARMING HIVE?

Mr. Aspinwall—I am much obliged to Dr. Miller for bringing this matter up. Perhaps if he will look over the past and present he will see that other factors help out in this matter. The matter of drone-cells; the matter of hive-room and ventilation; all these are factors that enter into the control of increase. When I looked over the past and referred to Quinby's work of 1852, there was such an enthusiasm in reference to the increase of bees that Mr. Quinby said that the season had prospects, or something of that kind, or charms that the different bee holders could never realize.

Mr. Langstroth said it was one of the most beautiful sights in the whole compass of rural economy. People were looking for swarms then. We are not today; it is the bane of bee-keeping I doubt if there are half a dozen in this room who are keeping many bees, but have gone home at night thoroughly worn out with the swarming of the day.

I will merely say that the matter of controlling on my part is more with the hive than with manipulation. I tried these various methods some years ago. To show that there is a prospect of a non-swarming hive, I have been at work 18 years upon it, but many in the audience know I am an experimenter on potato machinery; I have been at it ever since I was 19 years of age, and the first invention required 21 years to produce. That is the potato planter that is used almost universally in the United States and abroad to-day. So that the hidden things in nature are the things that come very slowly to us.

In the matter of the non-swarming hive the question of room is one important thing, and while I will not give you the details of the hive fully, because of other patents that are to be applied for within a very short time, I will say that I use slatted frames inserted between the regular combs of

brood, using usually 7 to a hive, sometimes 6, sometimes 5. Seven is about the best number, as I have already experimented with numbers from 5 to 8 or 10. My hive is made to hold 15 frames. In the month of May during apple-bloom, or rather during the bloom of the sugar maple and willow, the 7 combs upon which the colony is wintered are extended by adding one at a time, or 2, according to the strength of the colony. By the time apple-bloom is through, many of my colonies have 12 frames, most of which are filled with brood. Some times I have colonies that will fill nearly 14. Of course, my hives are packed so as to winter in the open air. This packing is left on until perhaps the end of the apple-bloom, sometimes earlier, according to the temperature. The tray is left on the last. Just at the opening of the main honey-flow these slatted frames are placed at once between and outside of the 7 combs, speaking for the large number I use now. That gives an outside ventilating space and standing room for the bees as well as inside. It is very important we keep the outside cool, where the sun strikes, by an intervening space. My sections are supplied with slatted separators the same as below. So I spread out over 15 combs—these include the 7 and 8 slatted frame—9 rows of sections. The bees are entirely devoid of the swarming impulse under this spreading condition. We all know that the cause of swarming is the *bees*. If we have a weak colony that does not cover the combs, it will not swarm. If we reduce that condition at the start we have deferred the swarming impulse somewhat. Then putting on 36 sections, when they are well started in that raise that super and put 36 more under, and we have 72 sections; and I have found by experimenting with lesser and greater number that 72 sections is necessary for a colony of 50,000 bees in order to prevent swarming. Now, you see we have made the placing of sections upon this hive compulsory to overcome swarming. I use full sheets of foundation. Should I stop one week in the honey-flow there would be one factor present itself, and would not prevent swarming, and that is the clogging of the hive with honey. There would not be sufficient room to give employment for all the comb-builders.

Many of you are aware perhaps that in the economy of the hive at a certain age the bees take to the fields. If there is an insufficient number of workers, the younger ones will leave for the fields perhaps a few days sooner than their natural time for leaving the hive. I know from experimenting that many young bees are drawn out of the hive at 12 and 13 days old, simply because we have forced the bees in that direction.

Now, the paper that was read was by the writer of an article in the Review in November, and he treated the subject of controlling increase largely by the feeding of the larval food. I think he has gone into it a little blindly, with all due respect to him, because the bees adapt themselves largely to circumstances in reference to working either for comb or extracted honey.

Now I have given in brief the outline of my system

of working. I will leave the matter, and any questions that may be asked I will be very pleased to answer.

Mr. Bartz—Do you use a queen-excluder between your super and brood nest?

Mr. Aspinwall—No, I do not.

Mr. Bartz—Does the queen keep the combs supplied with eggs sufficiently during the time you use those slatted frames?

Mr. Aspinwall—She does.

Mr. Bartz—So that the brood-rearing does not increase with the use of the slatted frames?

Mr. Aspinwall—No, nor is there chilling of the brood. I have produced, from 35 colonies, this year an average of 128 sections filled with honey, and not one cell with brood.

Mr. Pettit—What was the thickness of those slatted frames?

Mr. Aspinwall— $\frac{3}{4}$ of an inch in the super; $1\frac{1}{2}$ inches in the lower compartment.

Pres. Dadant—For how many years have you tried this method?

Mr. Aspinwall—I have been trying it about 10 years, but it has been subject to many modifications.

Pres. Dadant—How long have you tried it on that many hives?

Mr. Aspinwall—My experiments have been on between 40 and 45 hives every year for 10 years, and this year the radical change of making all new hives took place. Next year it will be all new hives again, like those that proved to be the best last season.

Pres. Dadant—How many combs do you winter on?

Mr. Aspinwall—7.

Mr. Whitney—Do you extend them laterally?

Mr. Aspinwall—Yes. I am satisfied that the drones that are produced in the section-boxes, and even the extending of the brood-nest in the center, as I have known them where they have been crowded, is due to the crowded condition below; the queen can't possibly fulfill her duties. If you will examine colonies that have swarmed you will find in many instances patches of comb without an egg in. This is exceptional, however. That is because the queen has been crowded. She is then in the condition of the old queen that fails to fulfill her function in this respect, and the bees immediately by the condition of things start queen-cells.

Dr. Bohrer—Does your experience teach you that is the universal or general rule?

Mr. Aspinwall—I think it is universal. I have tried it on that many colonies for so many years, and found it invariably true in my yard.

Mr. Wilcox—You made the statement that you average 128 sections per colony. Is the honey-flow continuous from willow bloom to clover bloom?

Mr. Aspinwall—The willow bloom was very short this season, followed by half that number of days until apple bloom.

Mr. Wilcox—How long is that?

Mr. Aspinwall—We had clover about June 15 in our locality this year, and it lasted till July 23. I have no honey after that to speak of.

Mr. McEvoy—Did you feed any in that gap?

Mr. Aspinwall—No.

Mr. Wilcox—Did you feed, and how much, from the time the apple-bloom ceased until the clover-bloom began?

Mr. Aspinwall—I did not feed one ounce in the spring. My feeding is done in the autumn, and nothing after that, for the last 15 years.

Mr. Wilcox—It is possible in your locality if you had apple-bloom that the bees store so much that it would carry them over that period, but it never is so in my locality. They would need feeding during that period, for the queen would stop laying, and they would begin to decline in numbers.

Mr. Aspinwall—That is true. I watch them, and those colonies that have the most I will interchange combs with sometimes. But I did not do it this year.

Mr. Ferris—Tampering with the queens will injure the colonies. I took 25 colonies and put them in a row; one row was made queenless and the next not so, but I found those that were made queenless for 10 days stored more honey than those that had the queen. This proves that taking away queens does not lessen the amount of honey. Those that have no queens will store just as much honey as those that have queens in the hive.

Mr. Holtermann—How long is your honey-flow?

Mr. Ferris—About the same as Mr. Aspinwall's.

SECOND DAY—MORNING SESSION.

At 9:30 a. m. Pres. Dadant called the convention to order, and called for the presentation of resolutions.

Dr. Bohrer moved, duly seconded, that a committee of 3 be appointed to examine the exhibits and report upon them. Carried.

Dr. Bohrer suggested that the chair appoint a committee of three on resolutions. The suggestion was accepted by the convention.

Mr. Holekamp moved, seconded by Dr. Bohrer, that a committee be appointed to consider suggestions that might be made as to changes in the constitution and amendments thereto. Carried.

The Secretary read the following paper by Hildreth and Segelken, of New York on

CAN THE TARIFF ON COMB HONEY BE TINKERED TO THE ADVANTAGE OF THE UNITED STATES BEE-KEEPER?

There is not very much to be said in answer to a question of this kind; principally for the reason that there are very few markets, if any, which are shipping comb honey into this country in competition with the American produced

article. We have noticed in some of the bee papers some comments upon this subject and it appears to be a question of some importance to some of our domestic bee-keepers, who seem to be scared and afraid that foreign comb honey will eventually flood the American markets, and thereby lower the price of the home product.

We are of the opinion that there is no necessity nor good reason for anxiety on the part of our bee-keepers, who seem to be laboring under the impression, and have an idea, that in the West India Islands honey can be produced in abundance and at very little expense; but they do not take into consideration the drawbacks and disadvantages which beset the Cuban or West Indian producer. Cuba is perhaps the only country which is sending comb honey to the United States. This country has been attempting to produce comb honey for the past 3 or 4 years without very much success up to the present time. The principal reasons for the non-success is that most of the honey produced in Cuba has been produced in what is known as the Cajacriolla, or native hive, which is composed mostly of logs formed in a triangle, with a rock for a top, or some similar device. In such an apiary as this, a person of ordinary intelligence can understand that comb honey cannot be produced.

There has, however, been an evolutionary movement among the bee-keepers of some understanding, on the subject of apiculture, to use what is known as the "Systemo Americano," which, when translated, would be recognized as our own modern bee-keeping system. It is difficult to say what percentage of producers are using modern methods in Cuba, but it is safe to say that not more than one-third.

Then bee-keepers' supplies cannot be purchased in Cuba as cheap as they can in the United States, for the reason of the excessive ocean transportation charges and the high railroad charges after the goods have reached Cuba. It would, therefore, be in order to say that bee supplies would cost the Cuban producer, delivered at his apiary, 20 to 25 percent more than the cost of the American bee-keeper in his own country.

After considering the cost of the material for the production of comb honey, the next point to consider is the labor. The native bee-keeper in Cuba knows nothing about the production of comb honey, and his experience up to the present time has not been much of a success. Some few parties who are producing comb honey in Cuba are only able to do so with the aid of expert American honey-producers. To the ordinary bee-keeper this is impossible, owing to the large share of the production that would be necessary to give to such an individual, or the comparatively large salary which would need to be paid. There are, therefore, but very few native honey-producers who are enterprising to this extent, most of the comb honey being produced by Americans in Cuba. The cost of producing comb honey in Cuba is always estimated by the value of the extracted honey, and wax that would be used in the production of the comb honey, plus the additional cost of labor, and when

this is figured down to a true basis, comb honey cannot be produced for less than 7 cents per pound, to any advantage, no matter what the grades may be. Where the price is lower than this, it is much more advantageous to produce extracted honey and beeswax.

There is another point to consider, which is not capable of exact calculation, but every bee-keeper who has ever produced honey in Cuba has stated that when producing comb honey, the result is considerable less pound for pound, than when producing extracted honey and wax. This would necessarily bring the comparison average still higher than the estimated cost.

The freight from inland points in Cuba to the city of Havana, which is the principal shipping center for honey, is higher than that in the United States, and the ocean freight rate would figure about 15 cents per shipping-case, or an average of about $\frac{3}{4}$ cents per pound; in addition to this, the duty would amount to 1-1-3 to $1\frac{1}{2}$ cents per pound.

Assuming that honey could be purchased at the same comparative cost on the basis that we have already estimated—7 cents per pound—and adding the charges mentioned, it will be readily seen that Cuban comb honey cannot compete with American produced comb honey.

Furthermore, it must be taken into consideration that Cuban Comb honey cannot reach the American markets as early in the season as our domestic product. Domestic comb honey reaches our various markets, say from the latter part of August up until November. The season in Cuba, if favorable, does not commence before the middle of October, and very often there is no honey-flow to any extent until November or December. It is safe to say that comb honey from Cuba cannot reach our markets before December, and generally not before January. By this time, in ordinary seasons, unless there is a large crop throughout the United States, which rarely, if ever, happens, the domestic crop is, or should be, well cleaned up. Of course, there are always some bee-keepers who will *hold on* to their honey instead of selling at fair market value when they have an opportunity. It may be somewhat out of place to make mention of this matter here, but, nevertheless, it is a fact which should be taken into consideration. Those bee-keepers have a perfect right to hold on to their honey for better prices, which, however, as our experience for 20 years has taught us, are very seldom, if ever, realized. It is such honey which is *being held* that may come into competition with the Cuban product.

Years ago there was practically no demand for comb honey after the holidays, and whatever was unsold by January 1st, was considered dead stock and was a drug on the market. Slowly and gradually there has been a change, and there is now a demand for comb honey from January until May, although prices may generally rule lower than those obtained in the early fall. Therefore, it is only this late market, or spring market, on which the Cuban bee-keeper

can depend for the sale of his product, and he must be satisfied in realizing whatever the market will warrant.

The Cuban bee-keeper is not bedded on roses, even if he walks under palms. The high cost of the supplies, inland freight-rates, ocean-rates, high labor, import duty, and the late market, are against him. Why then, we ask, should the American bee-keeper fear this competition?

In conclusion, a further point to consider with regard to the question of raising the tariff, is, that it must be remembered that our tariff treaty with Cuba is a reciprocal one, and were we to make it prohibitive by increasing our tariff in the United States, upon what little comb honey there is shipped from Cuba, there is no question but that the Cuban government would fail to see the justice of such reciprocity. Our manufactured exports from this country to Cuba amount to an item by which the honey-production in this country cannot be compared, and if the tariff on comb honey should be tinkered to the advantage of the United States bee-keeper, there is no doubt that the tinkering would be very much to the disadvantage of our other commercial interests, which facts will no doubt receive the proper consideration if such a Bill were introduced into our Congress.

We do not desire to decorate ourselves with strange feathers, and wish to say that some of these facts in regard to the condition in Cuba, have been given us by parties who are thoroughly acquainted with the situation. As far as we ourselves are concerned, we have endeavored to state the facts as they exist, without any prejudice or partiality on our part.

The answer to your question is, therefore, "No."

HILBRETH & SEGELKEN.

The Secretary read a paper by E. D. Townsend, of Remus, Mich., on

HOW MANY BEES SHALL A MAN KEEP?

This is a broad subject, and I do not suppose that any two in this room would answer the question anywhere nearly alike. As the writer is a specialist, with bee-yards located in Isabella, Mecosta, and Kalkaska Counties, Michigan, where a hundred colonies is about all that it will pay to keep in one location, and where large numbers of bees have to be kept in small wards in some cases, as in our Kalkaska County yards, quite a distance from home, this paper will be from a specialist's standpoint.

I think we will all agree that a larger number of bees can be kept more profitably in a location that will support several hundred colonies in a single locality, than if they had to be scattered out 100 in a place, as most locations in Michigan compel one to do.

Now just a word about the man: The writer will expect that he has made a financial success with at least one yard, and has learned short cuts, so that when he gets his honey ready for the market he can take his pencil and figure out all his expenses, so that if he had hired the work all done

there would be a profit of, say, \$300 or \$400 from the one yard, for you will see at a glance that quite a percentage of the additional yards one adds will have to be managed with hired help; for it will be folly to think of more yards until one could make a financial success with one.

Now we will suppose our prospective experimentalist is a suitable person. I would have him add yards just as fast as his experience will admit. I do not think there are many in the business who would be capable of adding more than one yard each year, while many would better not try to add more than one every other year, until the necessary experience is attained in managing out-yards; then this can be kept up until the desired number is reached. The writer's practice is to establish about 3 yards near home, then go to another location where the pasturage is of an entirely different nature, and establish more yards, so that if one locality should fail to produce he will be quite likely to get a crop in the other locality. This puts the business on a sound basis. To be sure, the honey produced in the yards some distance from home costs a little more to produce, but the assurance of having a crop in one or the other location every year amply pays for the little extra expense in railroad fares, etc.

Then there is another point of importance, and that is, if you like you can keep bees with a profit anywhere in Michigan, so that if one is located where the territory is occupied, all he will have to do is to take a train and go where there is unoccupied territory, and establish yards in this way. One does not have to change his place of residence for the sake of keeping more bees. The writer has kept a yard of bees of less than 100 colonies 50 miles from home for 2 years with only 8 visits during the 2 years, and harvested \$1,200 worth of honey during that time, and at present has 200 colonies in Kalkaska County, 105 miles from home, that have been worked successfully for the past 2 years, so what I write is from a practical bee-keeper's standpoint.

In the above I admit I have wandered somewhat from the main subject, and will excuse myself by saying that I am going to tell you how many bees I shall keep under the conditions named above, for you will understand that under some other conditions one might keep more or less bees as circumstances would admit, and now for the number of colonies I shall keep.

Here at Remus, where white clover and fall pasturage is the source of our honey crop, we have 3 yards of 100 colonies each; this is all we are planning to keep here; then in Kalkaska County, where red raspberries is the source of our surplus, we have 200 colonies; these will be increased to 3 yards, and it looks now as if this Kalkaska locality will support more than 100 colonies in one yard. In this case our 6 yards may contain 700 or 800 colonies, although our number now is only about 500. With this number of colonies in two locations, where the honey source is of an entirely different nature, one feels quite sure

in depending upon the bees for a living, and a little extra for a rainy day, without burdening himself with many more, as some are doing.

E. D. TOWNSEND.

Mr. Hilton—I am interested in the paper by Mr. Townsend, because he is practically a neighbor of mine, living in an adjoining county, a man I am very well acquainted with, and a man I very much admire. He has had experience with out apiaries, and so have I, and his experience with my own experience, with which I am familiar, I can readily come to the conclusion that very much depends upon the environment of the man, as to how many out-apiaries he shall keep, or how many bees. Mr. Townsend's environment is of a character that he can give his unlimited and unstinted time, if necessary, to his apiaries and to his business of bee-keeping. Mine are of that character that I can hardly leave home for 24 hours. In fact, in the employ of the Government as I am, I am not permitted to be absent from my office to exceed 48 hours without permission from Uncle Sam.

Now the question of these out-apiaries depends upon the environment of the man, and the ability of the man as a bee-keeper. Most of those within the sound of my voice are very naturally adapted to the business, or you would not be here; and those of us that are adapted to the business of bee-keeping can take it up to a successful issue if we can apply ourselves to it. In the first 15 years of my experience as a bee-keeper I made quite a success of the production of honey in home and out apiaries. As other conditions bound me tighter to my office and home surroundings, my bee-keeping outside of my home became less remunerative, until I was actually obliged to abandon my out-apiary. The only bees that I have to-day are those in my little home-yard in connection with my home and garden, and the other things around my immediate family surroundings. So that the question to be answered, as I see it, must depend very largely upon the man and his ability to manage and his manner of management.

Now, the paper will strike some of you as very strange when Mr. Townsend says he has kept bees 50 miles from home for 2 years and has only seen them 8 times. Mr. Townsend does this, and successfully. I never did it—I never knew enough to do it—and I give Mr. Townsend credit for knowing a great deal more than I do, because he does it. Just how he does it I am not in a position to state. That he intends to do more of it there is no question of doubt.

Mr. McEvoy—Is it all extracted?

Mr. Hilton—No, sir. He produces both.

Sec. Hutchinson—That yard managed that way was all extracted.

Mr. Hilton—I think it was. Mr. Townsend says we are not obliged to change our home surroundings to keep out apiaries, provided they are of such a character that we can give the necessary attention to the out-yards when it is necessary. So that we can take into consideration one fact, that if we are the right person, and if we can adapt our-

selves to the right localities and conditions, we can have about as many out apiaries as we want, provided we know how to manage them.

Dr. Miller—I don't think there are very many who follow the advice of the writer, but it is worth while for us to know what an exceptional man can do in an exceptional way, and so I value the paper.

Mr. Baxter—I take for granted this paper was intended for the specialist—the man who makes bee-keeping his sole occupation—and I don't see any reason why a person in that capacity, if he has the necessary ability, could not manage an apiary like that and make money out of it.

Mr. McEvoy—I don't think he tells you in the paper just how he manages the business to control it so.

Dr. Bohrer—I think the ground was pretty well covered by Mr. Hilton. I found I could keep as many as 100 colonies and upwards in one yard in Indiana, but my immediate neighbors did not have as many of them. There are probably not 500 colonies of bees in the county where I live now, and I might keep 1,000 or 2,000, but if each neighbor on each side of me was to start up with so many colonies, we probably would exhaust the resources. We don't know what it will be in our country. Alfalfa is becoming more abundant every year, so that it is not a settled question, and cannot be at any time, yet I am willing that all of my neighbors, if they will take good care of their bees, should keep a few colonies to get honey for their home use. If they do not intend to take care of them, and will allow foul brood to get in amongst their bees, and will keep a low grade of stock at that, I do not think they ought to be allowed to keep any. The scientific bee-keeper will always find elbow-room in such portions of the country as are adapted to the production of honey. The specialist has to look out for a territory, and I can not tell him where to go. If he wants to come down to Rice County, Kansas, I can point him to an excellent place there where they have good climate, lots of Alfalfa, good looking women, and splendid men.

Mr. Holtermann—I am a specialist in bee-keeping, and in regard to the question of how many colonies of bees a man should keep, I agree with the idea first of all that if a man won't keep them properly he would better not keep them at all. In the next place, as to how many the specialist shall keep, I am finding a difficulty which I am unable to overcome and produce first-class honey, and that is, that at a certain stage in the honey-flow in the average locality there comes a time when we shall extract. Now if those bees are run in the best way, the honey is all ready to extract at about the same time, and the difficulty I find is to extract all at the same time. I have got up to something like 340 colonies of bees, and am wintering 339, beginning with 300. I have tried to do my work quickly, intelligently, and expeditiously, and I have at different times taken out from between 5200 and 5300 pounds of honey in a day, and yet it puzzles me to overcome that difficulty of dealing with those colonies at about the same time. I have used 6-frame extractors, and

I am selling them now and taking an 8-frame; I have ordered a gasoline engine, and I am having made an uncapping machine. I am trying to increase the speed of extracting, but the greatest difficulty which confronts me is that of dealing with those colonies at that time quickly; and unless I can succeed in increasing my speed of extracting, I can't increase much beyond the 300. I have read Mr. Townsend's system and method, and I may be wrong, but I am convinced that there are very few indeed that could carry on out apiaries and keep bees in the way in which Mr. Townsend seems to be successful; and I think it would be a mistake for bee-keepers, and for the welfare of the people at large, to let the idea go out that people can conduct out apiaries and run them successfully, except under very exceptional conditions, by visits of that limited number in a year.

Mr. Hilton read a paper by Mr. M. A. Gill, of Colorado, on

SHORT CUTS IN BEE-KEEPING

In practicing the short cuts in bee-keeping the first thing to commence upon is yourself. Don't go into the battle and find that you are out of information and ammunition; be prepared, and then don't worry. It is a fact, perhaps, that no class of men worry so much about the weather as bee-men. Who was it that said:—

As a rule, man's a fool;
When it's hot, he want it cool;
When it's cool he wants it hot;
Always wanting what is not;
So, as a rule, man's a fool.

Remember that the sun is everlasting, and that the clouds are only temporary, and that it is best to turn them wrong side out, occasionally, so that you can see the silver lining; and when you cannot count your profit count your other blessings. That was the only way I could get any comfort this season, when I figured up that my sales had been \$400, and my expenses, \$1,500.

In giving my ideas of the "short cuts in bee-keeping," I shall give them from my own view-point—that of working for comb honey; not with 100 colonies, but with more than 1,000, in a climate such as is found only in the arid West.

If you intend to keep bees upon a large scale, establish a large home apiary and have ample shop and warehouse room where all work is done and supplies kept for the out-yards. Don't build a lot of useless honey-houses at each out-yard; but get the habit of using your wagon with a good sheet, which is always bee-tight if properly used.

Much valuable time is lost by taking all supplies from the wagon to a honey-house, then out to the bees; and by taking honey from the bees to a honey-house, to be again moved in a short time to the wagon. Better take your honey right to the wagons, keeping it perfectly bee-tight (if condi-

tions require it); thus there is only one exposure to the bees. By this plan your load is ready to go home when you are.

If you intend keeping bees on a large scale, don't turn inventor; and don't adopt every new-fangled hive that comes along. I know there are many inventors who claim that if their particular fussy plans were adopted universally, bee-keeping would be revolutionized.

In my opinion the poorest hives are of recent invention, and the best practical hive ever invented was that by Father Langstroth, 50 years ago—and "Glory be to his name!" Yes, the simple Langstroth hive, with Hoffman frames, and the more modern supers, are good enough. Whatever you use, have a complete uniformity of fixtures.

When it comes to the management of bees in all climates where they may be wintered out-of-doors, have your winter loss the previous autumn. This can be done by killing poor queens and doubling up until every colony has a vigorous queen, a hive full of young bees, and full of honey. Then in the spring, if conditions are normal, the bees will lead you along at a merry clip to keep up with *your* work, instead of your continually fussing with them to get them ready for *their* work.

In supering the bees, there are three in my crew: One wheels the supers from the wagon; another puts them on the hives; and the third man follows with a spirit-level and a grape-basket full of little wedges (that have been previously prepared), and properly levels each hive.

In the care and management of swarming is where every bee-keeper is put to his wits' end to be equal to all emergencies. No two seasons are exactly alike, and any system must be varied to meet contingencies.

In locations where the last half of July and all of August have a sufficient flow to store surplus, it is safe to shake a whole apiary from May 25th to June 10th (varying the time as conditions vary), making, perhaps, from 75 percent to 100 percent increase, and seeing to it that all increase has young laying queens as soon as possible.

You may expect such an apiary in such a locality to come up to the close of the season with as much surplus honey as though there had been no increase—and you are the increase ahead; and, besides, the plan will enable you to place such yards "*hors-de-combat*" through the swarming season, and enable you to give your entire attention to yards where the main flow of honey is earlier.

Where you wish to control swarming, or increase rather, this can be done completely by the so-called shook-swarming method. With me, shook-swarming is the most feasible route I have found to the absolute control of increase. Any plan that requires any subsequent fussing with, is not practical with the man who is caring for hundreds of colonies and running on schedule time and visiting every colony every 6 days. I think many who have tried shook-swarming, and have condemned the plan, have mistaken superseding for swarming in some cases, and in such a case it will always

fail. It is surprising, sometimes, when a large percent is found superseding during the months of June, July and August, where the go-as-you-please plan is followed with regard to queens.

I am not going to try to cover the ground under my title, "Short Cuts in Bee-Keeping," for I believe that the most satisfactory and effective work in bee-conventions comes from the batteries that are always trained upon the question-box.

In recapitulation, I will say that preparedness, alertness and a complete mind-picture, as it were, of all conditions in each apiary; this, together with uniformity of fixtures, and a complete knowledge of your field and its flora, constitute the short cuts in bee-keeping, and all this means *work*.

M. A. GILL.

Mr. Baxter—The paper should be entitled, "Short Cuts to the Production of Comb Honey," because there are many things in the paper that are not applicable to extracted honey.

The President named the following committee:

Committee on Resolutions—W. H. Putnam, O. L. Hershisser and W. Z. Hutchinson.

Committee on Exhibits—M. Pettit, A. K. Ferris and E. J. Baxter.

Committee on Amendments to the Constitution—R. A. Holekamp, E. R. Root and George W. York.

Committee on Question-Box—R. L. Taylor, N. E. France and W. McEvoy.

The Secretary then read a paper by James A. Green, of Colorado, on

PRODUCING BOTH COMB AND EXTRACTED HONEY ON THE SAME COLONY

Whether comb or extracted honey can be produced most profitably is a question that is often asked, and one that each man must settle for himself according to the conditions under which he must work. Having settled this, he is too apt to assume that he should confine himself entirely to the production of one or the other. We all know something of the advantages of specialty, and I would be one of the last to decry them. Yet I think that in many cases, at least, the bee-keeper is making a mistake in so deciding. The extracted-honey man is all right. He has no need to produce any comb honey, and in most cases, it will not pay him to do so.

With the comb-honey producer it is different. All practical comb-honey producers know that it is a difficult matter to get all colonies in such condition that they will enter the supers promptly at the beginning of the honey-flow. A colony that is in just the right condition will go into the sections with a rush and keep things moving right from the start. Another, apparently as strong in numbers, will hesitate about going into the super, and do nothing for some days except to crowd the brood-combs as full as possible of honey. This perhaps results in swarming, which in many localities and with some systems of management, effectually spoils the

chances of any comb honey from that colony. In any case, the colony that started promptly in the super is pretty sure to have a great deal more honey to its credit than the one that is slow about starting, even when they are apparently equal in all other respects. It is exceedingly important that the bees form the habit as early as possible of storing their honey in the super.

Bee-keepers generally are in the habit of using "bait-combs" in the supers to secure this early start. But even a full super of drawn combs in sections is not as good for this purpose as a nice set of extracting combs.

For a number of years I have combined the production of extracted honey with that of comb. My extracting supers are only 6 inches deep with the frames at fixed distances, firmly held in place by a thumb-screw through the side of the hive, after the style of the Heddon hive. This makes them easily handled as a whole, and none of the frames are ever handled separately until they come to the extracting room.

One of these supers is placed on each colony at the beginning of the honey-flow. The bees enter this readily and if there is any surplus to be gathered, it goes into the super. After the bees are well at work in it, a super of sections is placed under it, after the usual tiering plan, or sometimes the extracting super is removed altogether and replaced by the super of sections. The combs thus removed are placed over the poorer working colonies. There will always be some colonies that will not do good work in the sections, because they are not strong enough in numbers, because they are not good comb-builders, or because they do not cap their honey with the nice white finish so necessary for a fancy article. On these colonies the extracting combs may be tiered up to any desired height and left to be finished, or until you are ready to extract the honey. This gives you the ability to use profitably those colonies that are not good for comb honey. In most apiaries there are bees that are not fit for producing comb honey; simply because they fill the cells so full that their combs have a water-soaked appearance that detracts largely from its market value. These should be culled out, if comb honey is what you are trying to produce, and their queens superseded with better stock as soon as possible. In the meantime, they are just as good for extracted honey as any.

It takes a strong force of workers to work comb honey profitably. A colony that will do very fair work at storing honey in combs already built, may do little or nothing at building comb in a super. That foundation principle of bee-keeping, "Keep your colonies strong," applies with much greater force to colonies producing comb honey than to those run for extracting.

For this reason, I keep extracting combs on all colonies that are not yet strong enough for the profitable production of comb. When they have reached the point where they can build comb profitably, the extracting combs may be exchanged for sections. When a colony swarms or is divided,

its comb supers go with the swarm, while a set of extracting combs is put on the old colony until it is in good working condition again. Any colony that at any time during the honey-flow is found to be doing poor work in the sections, has those sections promptly removed and replaced with extracting combs.

One of the greatest advantages of this combination system is seen at the end of the season. As the honey-flow draws to a close, instead of giving new sections that may never be completed, give extracted combs to the colonies that are doing the poorest work in the sections and give their sections to other colonies to complete. In this way you not only secure a larger amount of finished honey, but you avoid the expensive nuisance of having a lot of unfinished sections on your hands at the close of the season.

By working in this way I have sometimes had nearly every section in an apiary of over 100 colonies, run mostly for comb honey, finished up into marketable condition at the close of the season. Another important point to be considered is that in many localities, the last honey gathered is not fit to be put into sections, but can be much more profitably handled in the extracted form.

It will be seen that by this system there is considerable changing about of unfinished supers. Usually the supers are first freed of bees by the use of bee-escapes, but during the honey-flow I simply get out the greater part of the bees by smoking, and then shaking or "jouncing." The few bees that are left do no harm and are just as useful in one hive as another.

Of course a queen-excluding honey-board is a practical necessity with this system, but its advantages are so many and so great that I would not think of doing without it.

Several years ago I was much taken up with the idea that has been made public during the past season of using one or more extracting combs in each comb super, but I soon gave it up, as it seemed to me too fussy and complicated, and not nearly as well suited to practical work in a large apiary as separate supers, used according to the needs of the particular colony.

The system I have outlined has been in practical use in my apiaries for nearly twenty years. There are some small advantages that I have not mentioned, but briefly, the advantages of the system are that it secures more honey, a higher grade of comb honey, saves a great deal of waste, and does it with a control of the bees and an economy of labor that is not to be secured by any other method that I am familiar with.

JAMES A. GREEN.

PRESENTATION OF LANGSTROTH GAVELS.

Dr. Miller—Mr. President, I am commissioned to present, through you, Mr. Dadant, to the National Bee-Keepers' Association, a gavel whose source can not fail to make it an object of interest to every bee-keeper present. It is also my pleasant task to perform a like service, in presenting its

mate to the Chicago Northwestern Bee-Keepers' Association, through its President, Mr. George W. York.

The loving heart of a good friend of both Associations conceived the idea of obtaining two gavels which should be constant reminders of the man to whom apiculture is so greatly indebted—Rev. Lorenzo Loraine Langstroth. So an appeal was made to Dr. Dan Millikin, of Hamilton, Ohio, to see whether he could not secure a piece of wood from a tree in some way associated with Father Langstroth. Dr. Millikin in turn applied to Prof. R. W. McFarland, residing in the same county, at Oxford, where Langstroth lived for so many years.

In reply came a package and a letter in which Prof. McFarland wrote, in part, as follows:

LETTER FROM PROF. MCFARLAND.

The weather was so disagreeable to me, and my physical self so much under the weather, that I did not get the Langstroth limb until sunset, Thursday. * * * I saw Mr. Langstroth while he assisted in planting the tree, nearly 40 years ago. I held the end of the limb yesterday, while my neighbor sawed it off. So your friend may be assured that this the genuine article.

While I was young, and was on my father's farm, 65 or 70 years ago, I was accustomed to attend the bees on our place. After seeing Mr. Langstroth's way, I saw that the old farm way was crude in the extreme. I assisted Mr. Langstroth 2, 3 or 4 weeks every summer for 10 or 12 years in the busy season. * * * It was a "joy forever" to be with Mr. L. and hear day after day, the simple, lucid words of wisdom which set forth the hidden things of nature and made you see them—and all unconsciously, so to say—things which among the bees he had seen and found out for himself.

Mr. L. was one of the finest men I ever saw—the very highest style of man. Having personally known him for more than 30 years, I may be able to give a point or two.

He was native of Baltimore; graduated at Yale College; became a Congregational minister; had charge of a college for women in Philadelphia for some years; lost his health and had to give up teaching; stayed a year or two in Mexico, hoping to regain sound health, but never did; studied bees and *mastered the subject*. For 6 months of every year—the winter months—he was unable to work at anything, usually kept himself closely in his room, but in the summer he was sunshine itself. His death well closed out a beautiful life. In the city of Dayton, Ohio, he was staying with a married daughter after the death of Mrs. Langstroth, and in church, one Sunday morning, he had just concluded the opening part of his services, preparatory to administering the sacrament, when taking his seat, in a moment his head fell on his shoulder. Men rushed to him and gently laid him down—but he was dead.

R. W. MCFARLAND.

You will likely want to know more about this man who for 10 years or more helped Mr. Langstroth for 2 to 4 weeks each year. A letter from Dr. Millikin tells something about him. This is a private letter, but is so thoroughly interesting and enjoyable throughout that I cannot forbear reading almost the entire letter. Injunctions have been laid upon me to say as little as possible about the donor of these gifts, but a full appreciation of this letter demands that you should know it is written to Mrs. J. J. Glessner, of Chicago, the one to whose kind thoughtfulness we are indebted for these precious mementoes. I shall read the letter just as it is, and trust to making my peace with Mr. Glessner as best I may afterward, for any betrayal of confidence:

LETTER FROM DR. MILLIKEN.

Dear, Mrs. Glessner—I am about to send you some wood from the Langstroth place—it shall go by express to-morrow.

When my wife made known your needs to me I thought at once of my father's friend, and my brother Joe's teacher and colleague, Prof. R. W. McFarland, of Oxford. He was an authority in classic learning ever so long ago, and an editor of one or two good editions in Latin. He was a mathematician so high in the second class that it always appeared that he ought to break into the class of thoroughly great imaginative mathematicians. He was no mean astronomer. He was a practical civil engineer. He lived long enough to become a very useful and successful mining engineer. He was a college president in spite of his many protests. He was, and is, a very enthusiastic naturalist. They don't make any such men now. Rockefeller and Carnegie together couldn't turn out more than two in a long year.

I think that Prof. McFarland is nearer 80 than 70 years. I hear that his locomotion is seriously impaired, and that his sight is also failing. Yet the letter which I enclose for you shows that he has at least one good eye. He is quite in retirement (the delightful retirement of an old scholar), but his influence upon the young disciples who love him and cultivate him, by far outweighs the impression of all missionaries to Africa, past, present, and to come.

I have written my politest letter of thanks to him. It is pure impudence in me to ask you to do the same and delight the soul of the gallant old gentleman.

Do you know that this is a case of *me, too?* I knew Langstroth very well, and I knew him at a very impressible time of my life. When I was about 16 he came down to Maplewood, where my father had about 20 hives of bees. At that time the enemies of the bee were apparently less destructive than now, for those neglected bees had persisted and they thrived through many years of comparative neglect. Occasionally it was found that a colony had died out in the winter, whereupon the hive was cleaned, sulphured, painted and set away for the swarms that were sure to appear when the clover and hot June days came. My father did not go

near the hives; my mother worshipped the little bees because they were the pets of her father who "died in '57." An old English gardner managed to steal a little honey now and then, but I do not remember at all how he got it; I only know that neither farther nor mother would consent to the killing of bees with sulphur in order to get the honey.

There came a time when Langstroth hives were made in Hamilton. The manufacturer was authorized to sell hives to my father, with the condition that Langstroth himself should come down from Oxford and transfer the bees, and he was so insistent that my father bought 30 hives to get rid of the pestiferous sash-and-window-blind man!

So in June, after I was out of school, and when the bees were busy with white clover and locust, here came Langstroth to the big farm. He was a large, slouching man, with a tendency to heaviness in the face. When the sodden look disappeared pain was the predominant expression. I do not now remember that he ever smiled. He came in a Lincolnian linen duster, and his other clothing was tidy and shapeless.

We received him in such fashion as became a freakish mechanic and inventor. It was many hours before I learned that he was a graduate of Yale, and hours again before I knew that he was an ordained Presbyterian minister. Later he was revealed to me as one who lived chiefly for the good of others. I fell wholly in love with him when I found that he was an out-of-doors man, a profound naturalist, and, in every fibre, a poet.

I learned, months after, that his career as a teacher and a preacher was spoiled by fits of melancholy. During these seizures he was often unable to endure the sight of a human face for many days together, and he was sometimes obliged to seclude himself from the public for many weeks consecutively. At the worst he fasted incredibly. When all was over, he would come forth, a staggering cadaver, slowly and shyly to resume his place in the family and in society. It is a marvel that, like most geniuses, he did not learn to blunt his pain with alcohol, or end all with suicide. When I had learned that he was under the curse of genius I comprehended his countenance better, and I came to doubt that the cloud ever lifted from his noble mind. If I mistake not, he died at the top, and achieved the only rest possible for such as he.

Well, I watched him from afar; I brought him dry and rotten maple wood and saw him subdue the bees with smoke. When they were gorged he inverted the old hive and drove his tens of thousands into an empty box set upon it; I saw the myriads shaken upon a sheet; I noted the orderly march into a Langstroth hive. We took the old hive to the cellar and mounted the combs as well as we could in another Langstroth hive, and we soon drummed out another colony of bees to take possession, and that day I graduated an apiarist. It was the first of many happy days with Langstroth and bees.

DR. MILLIKIN.

Dr. Miller—Mr. President, may the peace-loving spirit, and the spirit of unselfishness that pervaded the entire life of Langstroth, be present at all our sessions, whenever and wherever these gavels are wielded.

Pres. Dadant—The thoughtfulness which prompted this gift can only be rewarded by a vote of thanks from the Association and I will await the motion.

Mr. Taylor—I make the motion.

Dr. Bohrer—I second that motion; and before the motion is put I wish to supplement Dr. Miller's statement. A remark occurred in one of the papers that they had never seen Mr. Langstroth smile. I met him at one time and I think he was one of the jolliest men I ever met. That was in 1864. I was home from the army on furlough. I didn't see him any more until 1866, when I happened to catch him in his apiary when one of his attacks of melancholy was on. He was out in his apiary when I came to the gate and opened it, and I went right to him, and it was where these gavels were taken from, at the brick house standing in the grounds in Oxford, Ohio. He recognized me and shook hands with me, and said, "Please excuse me and talk to Mrs. Langstroth and my son James." That day, however, he did not smile. I saw him at what was known as the American Convention of Bee-Keepers, in Cincinnati, a few months later, and he did not smile there. It was a short time after he had lost his son, James T. Langstroth, and he asked me if I had ever endured any such experience as that. I said, "Not in the way of a son, but I have lost some near and dear friends. The most I can say in cases of this kind is to look to the mighty Physician, and in addition to that the record of your son is one no one need blush at." The old gentleman did not smile. I think the Association ought to accept this gavel as a memento, and it should be guarded and looked after with jealous care because he was one of the greatest men in bee-keeping that the world has ever known. There probably will never be another man live that will do so much for the profession as did Mr. Langstroth.

Mr. Hilton—I will now move to amend the motion, that the vote be given by rising.

The President put the motion as amended, and on a vote being taken it was carried unanimously.

Pres. Dadant—I wish to say the Presidents of both Associations will take good care of these gavels, and that they shall be handed from one President to another as long as the Associations last.

Dr. Miller—One little personal remark. At one time when I was for some part of the year working in Cincinnati, I went up to see Father Langstroth at Oxford, and I did not see him, he wasn't there at all. A very short time after that I was working in my office down in the city preparatory to the first of Theodore Thomas' May festivals, and Mr. Langstroth came in and we had quite a pleasant little visit. I was unknown entirely to him, and owing to the fact that an obscure bee-keeper had called to see him,

he came back to see me. I think it shows the humble spirit of the man.

Mr. York—I would like on behalf of the Chicago-Northwestern Association to thank the donor of the gavel, and it seems to me it is a very strange coincidence. I knew nothing at all about this, but about a month ago I designed an idea of having Mr. Langstroth's picture on the front page of this paper, and a poem that had never been published before, that he mailed to me over 10 years ago. I had the pleasure of meeting Mr. Langstroth at the Toronto convention, in 1895. I think Mr. Hutchinson will remember I went to Flint on my way to Toronto, and I believe it was near the Port Huron tunnel that Father Langstroth and his daughter, Mrs. Cowan, boarded the train; but I had never seen him before that. After we had ridden some miles Mr. Hutchinson said, "I believe that is Father Langstroth." They traveled nearly all day with us in the car, but we did not speak to him. At that convention I had the very great pleasure of meeting Father Langstroth, and talking to him for about two hours in the hotel while a number of the beekeepers went to visit the Exposition. It seems to me I never had been so entertained with any conversationalist as I was at that time with Father Langstroth, and I have been thankful to this day that I went to Toronto and had the pleasure of meeting the great Father Langstroth.

Mr. Aspinwall—Although I have been a resident of Michigan for 23 years, my home was originally in New York State, and my acquaintance with Mr. Quinby was some considerable, and up to the time of 1895 I had never met Mr. Langstroth, and I fully endorse the remarks made by Mr. York, of the courteous manner in which he received strangers and guests and entertained them. Previous to my return home, Father Langstroth, upon that short acquaintance, volunteered to send me an autograph copy of his work, which he did shortly after that session. I merely state this to show the spirit of the man as manifestly displayed by the remarks of Dr. Miller, that he lived largely in the interests of others.

Pres. Dadant—I wish to state that this gavel is engraved as follows: "Wood from tree planted by Rev. L. L. Langstroth in his garden in Oxford, Ohio. National Beekeepers' Association, 1905. T. M. G."

Mr. France—I would like to request on behalf of the Association, if they would favor it, that the Association draw upon its funds sufficient to have Father Langstroth's picture framed and hung in our convention halls at future meetings. I would move that. (Applause).

Dr. Bohrer—I second the motion.

Pres. Dadant—It will be understood that the motion is simply to recommend this to the Directors.

The President put the motion which was carried unanimously.

Dr. Miller—With your permission I would like to read the poem that Father Langstroth had written which has never been published till just now. It is entitled,

TO MY WIFE IN HEAVEN.

Wife of my youth—I dream of thee,
 Arrayed in bridal form;
 I hold in mine thy trusting hand—
 Hail! Happy marriage morn!

To God we vow our glad “I will”—
 Thy soft, responsive voice—
 Of twain made one by wedded bands—
 And I, with thee, rejoice.

Sweet, loving wife—God’s gracious gift—
 And art thou all my own?
 This plighted hand I’ll closer clasp—
 Dear Lord! I wake alone.

Ah! Silent lips, whose law of love
 So gently swayed my will,
 When trusting in thee, heart to heart,
 We were united still.

Weeping lasts but a night, dear wife;
 Joy cometh with the light;
 But for a moment darkened days,
 Then where there is no night.

Both shall be present with the Lord,
 Grievings and partings past;
 Soul knit to soul by Heavenly bands
 When lengthening ages last.

Dr. Bohrer—I received a letter embracing that sentiment a few days after he buried his wife.

Mr. York—I think it ought to be made a matter of record that Dr. Bohrer was present at the first meeting of this Association, and is present at this meeting.

The convention then adjourned to meet at 2 p. m.

 SECOND DAY—THIRD SESSION.

At 2 p. m. the President called the convention to order, and stated that they would now proceed with the discussion of the paper read in the forenoon, entitled, “Producing Both Comb and Extracted Honey on the Same Colony.”

Mr. Lyons—I think Mr. Green hit the nail on the head as far as the arrangement of his supers is concerned. I would like to hear some of the members tell their ideas with regard to the excluders.

Mr. Whitney—The method adopted by the gentleman who wrote the paper is identical with that which I use myself, excepting he used a half-frame for the extracting super instead of a whole Langstroth. To build up in the spring for the purpose of producing comb honey, I use the same method he does, and always have, and successfully.

Mr. Wilcox—Did you say you had made a success of both comb and extracted honey at the same time?

Mr. Whitney—As I understand the paper, he used some of those frames for extracted honey after taking off comb honey, by putting on some of the section frames. I do not produce comb honey and extracted honey on the same colony at the same time.

Mr. Stewart—I produce both extracted and comb honey on the same colony, at the same time, and very successfully, and I believe it is a good idea to do it. We all know that we can get the bees into extracting supers a great deal easier than into sections. We also know that at the close of the honey season it is the hardest work to get our comb-honey capped, and I use shallow extracting frames or extracting supers and comb-honey supers; the outsides of them are identical. My extracting frames are only $4\frac{1}{4}$ inches, and they are closed-in. The way I do it is, I put a case of sections on those that I think are less apt to go promptly in the sections, and after they get nicely started to work I put a comb-honey super underneath them, and they work in both of them, finishing up the extracting super and going on with the comb-honey work.

What I am most interested in is something that I have not practiced at all, and it is in line with the paper that was read, and I will give you an explanation of an idea that I have: I will set up 100 colonies in the spring if I do not find some obstacle to it. I have the bee-space in the bottom instead of the top; and to produce comb and extracted honey in the same frame, my extracting frame is identical with 4 of the honey-sections. I will put one frame of comb on each side of each super, and I will fill in the inside of it with sections; and my idea is that they will start up more readily in this drawn comb; not only that, but when the weather is cold, or for any reason, they do better work in the inside than they do in the outside. My experience is, in grading honey that 80 percent or more of the culls and unfinished honey that does not come up to the grade is on the outside. If I can have the outsides for extracted honey, I have my cull honey all in the shape that I can extract it. The way I calculate to use the T's in my supers is this: I will make some T's that are shorter than these here, and my frames are made of $\frac{3}{8}$ -inch stuff all round. The ends are $\frac{3}{8}$ of an inch wider than the tops or bottoms. They are reversible, and instead of hanging at the top they rest upon a support at the end of the casing. Then the extracting frames fit in there very nicely. But the rub is to get the T-supers to fit your cases. The way I will do that is, I will make some T's, and then take a little piece of tin and have that soldered on so that it will project out $\frac{1}{4}$ of an inch further than at the top, at the apex of the T. That $\frac{1}{4}$ of an inch will just hook over the top of the bottom part, and the bottom of the T will be flush with the bottom of the extracting frame.

There is another obstacle to overcome in using separators. I use plain wooden separators, and in order to have everything just as it should be you must have a fence or cleats on the sides of your outside separators to hold them up to the

sections; and if there are cleats placed on the outside you have a separator between your extracting frames and outside frames, and everything held up; and everything, as far as the comb-honey is concerned, is identical with what it should be in the other case. The advantage is in starting bees earlier than you can in any other way; and not only that you do away with 75 percent of the culls. That I think is especially true in the after part of the season. In the early part, and in the midst of the honey-flow, I could not see any advantage in it at all, more than possibly it would give them a chance to start some more honey.

Mr. Wilcox—Do you continue using those outside frames through the season?

Mr. Stewart—I don't know. I would use them to start with and finish the season. Whether I would use them in the center of the honey-flow I am rather doubtful; I don't know.

Mr. Ferris—I can see a great future for the comb-honey producer in that line of thought. I believe there is something we would all do well to think upon, and put in practice. I believe we will find our culls will be lessened, and our first-class finished article be more, and still have our culls in an extracted form so that we can dispose of them.

Dr. Miller—There still remains the fact that some of us do not get any more unfinished sections than we want to start in with the next year.

Mr. Stewart—This applies to those that do get more than they want.

Mr. Ferris—To my mind we don't want any unfinished sections left over at all. I wonder how many of us have ever found as fine, first-class honey in the unfinished sections left over from the other year as those nice, new sections we put in this year? I never have; and this is to get rid of all the unfinished sections entirely, and yet have the extracting combs we can use in the commencement of the season, and still do the same work as we would otherwise with unfinished sections.

Mr. Whitney—It seems to me that if the extracting frames are put into a double-walled hive and then transferred to some other locality and the section-cases put in, the outside sections will be filled just as quickly by the bees in the center. That is the way I have produced comb honey, and without any danger of having a lot of culls on the outside. The bees gather right around the closed section, and cluster inside of the outside shell so as to cover those cases completely, and the outside sections are just as warm as the inside; and they fill them out just as quickly, and often commence capping first.

Mr. Holtermann—The objection which I have seen to the production of comb and extracted honey in the same hive is this: It requires a good deal of concentrated energy to produce good comb honey; and as far as skill and time are concerned it requires more careful and skillful application to produce comb honey than it does good extracted honey; and where you have a percentage of your extracting combs

in that super you are really producing extracted honey at an increased expense compared with comb honey; and the more you produce the greater is the cost of producing that extracted honey. The question has been touched upon as to the unfinished sections on the outer sides of the hives. It has also been mentioned that it is not necessary to have these unfinished sections. That I am thoroughly satisfied is correct. I learned some years ago by putting in wedges between the bottom-board and the brood-chamber, the brood-chamber was practically raised an increase of $\frac{7}{8}$ of an inch from the bottom-board, and by that means the bees were compelled to go up at the side. By having a double bee-space at the sides, by careful experiment, I have found that the outside sections are in many cases even better filled than the center.

Some objected to the suggestion Dr. Miller threw out about cull sections, and an exception was taken by Mr. Ferris, which is perfectly right and legitimate. I have never seen a bait-section as well finished as a section built upon comb foundation. But on the other hand, I want to plead this, that for these bait-sections you can get a better price than you can get for honey after it has been extracted from those extracting frames. That is the reason I do not consider the system without its faults.

Mr. Wheeler—There is a point that has not been touched on, and that is the fact that when the bees have room to store extracted honey they stop the production of wax. To prove this, it is an easy matter to put on an extracting super when you take off the section-comb honey. Then after a few days put on a super of sections, and you almost invariably stop that colony of bees from working for comb honey. If you put into that hive some empty combs on the outside it has the same effect for the time being. The bees put honey into these empty cells and they stop the production of wax. I think it is a detriment rather than an advantage. I prefer to have every section filled, and then the bees are secreting wax.

Mr. Stewart—My experience is in working the brood in shallow supers, by getting the bees nicely started in the tops, and then putting on a case for comb honey and tiering up, it does not check them, and they will work in the sections below as if they had a case of sections above them. I don't think there is any difference. A person wants to use judgment as to when they shall put under that case of sections.

Mr. McEvoy—Now I think we can work this all right. We are going to work for both comb and extracted honey. This gentleman is going to put a frame for extracting and comb on the outside. That is all right. In the first place, fill those in between with foundation, and after they have extracted the first round the bees will brush up those dripping with honey, and they will pull those combs out between the sections very readily till I get them started. They are going to crowd the queen, and it is going to lead to a little early swarming. Now, I will head off the swarms and then

take out the extracting frames and shove these others up. I will hang a separator back of the frame and crowd them up, and now they have gone to work in that, and I will secure a quantity of honey, and I will take more dollars out of it than on the other section. Try it, and you will find I am pretty near right on that. I have worked at that since 1882.

Mr. Wheeler—I would like to ask Mr. McEvoy—why, instead of putting in full sheets of foundation and making them build it out for extracted honey, he does not put in sections just as well?

Mr. McEvoy—If I said that, I made a mistake. This is nice white comb. I raise it up and I put under a super or half-story comb to keep them working there. The space which is between the bottom and the top is just the same as was talked of, only it is a narrow frame and they crowd up. Give it a trial. If you find the season coming to a close, you can take 2 or 3 and put them in the center in extracting, and put the extracting combs on each side. They will come out without any being unfinished.

Dr. Miller—Mr. McEvoy spoke of having nice white comb there, and that point must be emphasized. If some of you think you can take old black combs and put them in there you will find the black comb will be carried over to your sections.

Mr. McEvoy—You are right. It will spoil them.

Mr. Pettit—There is a point in the subject matter of this paper, which I think I heard emphasized, and that is this shallow extracting super. It is about the right quantity of space you want to put on in the spring for fruit-bloom. It takes up the dark fruit-bloom honey, and what dark fall honey there is to go up, and that goes up into these combs, and then the sections are put on afterwards, and they get the white honey. And there is another point, when they get to working in these combs you don't want to take them away just when you put on the foundation, because I find without using the extracting combs we don't want to have them start storing honey in the extracting combs, and then take these off and put on foundation, because that immediately makes them sulk, and swarm before they start on the sections.

Mr. O. L. Hershiser presented the following paper on

WAX-EXTRACTING METHODS AND THEIR FAULTS

Wax is the most valuable of apiarian products, because it commands the higher price; and for the further reason, that it may be kept indefinitely without injury to its properties. Moreover, its market value is comparatively stable. Although a product of great value, comparatively little attention has been given to its production until quite recent times. The only explanation of the lack of interest in wax production is the fact that the product from a single apiary is small. Formerly the bee-keeper had but one apiary, and that rarely exceeded 100 colonies. The honey-extractor was

not in existence, and, hence, there was no wax from cappings. It is doubtful if the wax product before the era of modern bee-keeping, which may be said to have commenced with Langstroth, exceeded one-half pound per colony under the most careful methods by the best apiarists. A close observer, Mr. W. L. Cogshall, estimates that the wax-product under the present methods of production, is at the rate of 12 pounds to every 1,000 pounds of honey. In 1893, Mr. Mercer, of California, produced 100,000 pounds of honey, and about 2,000 pounds of wax, which would be at the rate of 20 pounds per thousand. Much depends upon the thoroughness with which the bees are allowed to cap the honey. It may be remarked, in passing, to those who may feel disposed to save time and pounds of honey by extracting before it is sealed, that they lose in wax more than they make up in additional pounds of unripe nectar, and are losers in the end both in dollars, and in conscience, by reason of failing to allow the honey to reach perfection in the natural way.

Until within quite recent times the most common method of producing wax was to place the bee-comb within a bag, immerse the same in a kettle of boiling water, and when the wax had melted and floated to the surface, skim it off or allow it to form into a solid cake before removing it. Good wax was thus obtained, but, obviously, it was a wasteful method; the amount of wax thrown away with the slumgum or refuse being from 25 percent, to 35 percent of the weight of slumgum.

The extracting of wax was a messy job, and because of this disagreeable feature, various other means of obtaining it have from time to time been devised, but classified with reference to the principles involved, they may all be brought under three heads, namely, the sun or solar; the steam and the hot-water methods. Practically there is but one solar method, but of the others, the steam and the hot water, the variations and the combinations are too numerous to mention in detail.

The solar extractor, with which most of you are familiar, is an excellent method of obtaining wax from cappings. The wax is of superior quality, which is attributable to the bleaching power of the sun, but mostly due to the fact that cappings are nearly pure wax with very little dark coloring matter in them.

For extracting cappings the solar is, perhaps, the most economical, as there is no expense for fuel, and no time required in its operation, except to fill it and to remove the wax. Moreover, in the extracting of cappings the amount of slumgum resulting is very small. When it comes to extracting wax from old combs the solar method is about the least desirable. Some wax can be obtained, but scarcely enough to pay for cost, maintenance and operating the machine. The difficulty with the solar method, in extracting old comb, is that the latter is usually largely made up of cast-off cocoons of the larval bees, pollen, propolis and other foreign materials, which act as a sponge to absorb and hold

the wax, preventing it from flowing out into the receptacle when melted. The extractor becomes choked with slumgum from each filling, and this refuse contains from 25 percent to 30 percent of pure wax. The percentage of wax remaining in the slumgum from cappings is even higher, but the small quantity of such refuse makes it of little consequence.

The solar extractor is perfect as far as perfection may reasonably be expected in it; that is, to get out all the wax that will drain off it by gravity. It is simple and cheap to construct and operate, requires no artificial fuel, and is no more mussy than any other method.

But a good, modern pressure-machine will do the work of extracting both the old comb and the cappings, and such a machine should be used by every apiarist, the solar method being supplemental thereto.

A method somewhat similar to the solar is the placing of the comb in an oven, on a screen, or a strainer, over a receptacle, so the wax will collect therein.

This method requires artificial heat, like the bleaching influence of the sun, and is open to all the faults of the solar method. Obviously, this process is slow and tedious on account of the limited capacity of the average oven.

The wax-extractor much used about 20 years ago, and through false economy still retained and used by many beekeepers, consists of a tin can divided into two compartments—a small one below to contain water, and a large one above within which a wire-cloth or perforated-metal basket, for containing the old comb and cappings, is placed. Means for steam to pass from the lower into the upper compartment is provided, and a spout at the lower plane of the upper compartment is so placed as to drain off the wax. In operation the perforated-metal basket is filled with water and placed over the fire. Steam is generated and as much wax as will drain out by gravity is obtained; that which remains in the slumgum being nearly as much as that left by the solar method. The last above-described method is, in the opinion of the writer, very little, if any, improvement over the primitive bag-and-hot-water method first mentioned.

A great improvement over the method last described is found in the Ferris extractor. It is rectangular in form, and is composed of from one to three units, like the other. These units are long and narrow, which facilitate the flow of wax. This machine has a compartment below for water from which to generate steam, and the compartment above within which is a wire-cloth basket to contain the wax-yielding materials. As first manufactured the wax drained off by gravity, but, subsequently, pressure, by means of a screw and follower, was used, resulting in a largely increased percentage of wax. To obtain the best results the screw must be taken out, the follower removed, and the slumgum raked over to expose new surfaces, and again pressed; and this operation repeated several times or until no more wax can be obtained. The fault with this machine,

in the writer's opinion, is that the follower and screw are too frail, resulting in their speedy destruction. Again, in this method, there is a certain amount of wax held by the slumgum, by capillary attraction, which no amount of pressure will expel. In my own operations, by an improved method, I have found the amount of wax that could be obtained from this slumgum to be over 15 percent of its weight.

Another form of the steam process is found in the Root-German wax-press, and with this I feel safe in saying you are all familiar, either by having operated it, or in the study of the machine in bee-supply catalogs, or in advertisements in our bee-periodicals. It has the merit of being compact and powerful, and it has satisfactory capacity. In my judgment, there is no better steam method in use. I believe it is recommended that the steam be combined with the hot-water method, by first boiling the comb or slumgum and then pressing it while under steam. In order to get the wax out clean it is recommended to take out the plunger or follower and also the slumgum, rake or stir it over to expose new surfaces, and press again; repeating the operation until no more wax can be obtained. This, obviously, is a mussy operation. However, while mentioning the good qualities of this method, I desire to note an exception to the widely published statement by the manufacturers of this press, that by its use "You can get every particle of wax out of old combs."

Having extracted several parcels of slumgum which had previously been treated by the German method, my experience is that several particles of wax still remain in this refuse. In two careful tests which I made of refuse from the German press, I obtained from one parcel 7 percent and from the other 11 percent of its weight in pure wax. I desire to go on record with the statement, that, so far as I have been able to ascertain, no machine with any amount of pressure will expel every particle of wax, when economically operated. I am prepared to say, however, that it can be accomplished economically to within less than 1 percent of the weight of the slumgum.

Messrs. Hatch and Gemmill have done much towards initiating improvements in wax-extracting methods, and I take pleasure in acknowledging that the publication of their experiments was what inspired me to make researches in this line. Not having had the time or opportunity to look up past records, I am unable, I fear, to describe the Hatch and Gemmill methods correctly. However, they are essentially hot-water methods, the comb first being boiled then placed in the form of a cheese with burlap or some other suitable cloth to retain it in place, and screw-pressure applied. I then believed, and still believe, that the hot-water method offers the best possibilities, and it has been along this line that my experiments have been made.

The pointing out of faults in methods implies that improvements are possible. All the methods described have more or less merit, and by using that which is good in them, with some added new features, an ideally perfect wax-ex-

tractor is possible. To produce this perfect machine cognizance must be taken of certain laws and physical properties of the various combinations of elements with which we have to deal in the operations. Specific gravity, adhesion, capillary attraction, absorption, etc., must be advantageously used or they will, and do, operate to our disadvantage. For example, take a sponge, saturate it with ink, or any coloring matter; now subject it to the most powerful pressure, and you cannot expel all the coloring matter. Why? Because capillary attraction holds it with a giant grip. But dip the sponge in water and press again and you will expel more of the coloring matter, and if you will repeat the process a few times you will get it clean of all color. The slumgum is sponge-like, and in a similar manner the wax must be washed out. Again, the specific gravity of wax being less than water, if we do our pressing under the surface of hot water the wax will float to the surface and thus be out of the way where it will not be re-absorbed by the slumgum. The masses of slumgum should be comparatively thin in order that the wax may more readily be expelled. It is not possible by the ordinary process to extract all the wax from the mass of slumgum for the reason that the interior parts thereof are not subjected to the same compression as the outside portions, the elasticity of the mass opposing and diminishing the actual pressure. Again, as the surface of the mass becomes hard and compact, the escape of wax is impeded. It follows that the interior part of the mass of slumgum is never so cleanly extracted as the exterior portions. Moreover, the power required to compress the mass increases greatly towards the end of the operation, as the more the mass is compressed the more solid and less impervious it becomes, especially on the surface of the mass, and hence the greater the force necessary to expel the remaining wax; and finally capillary attraction will hold a portion of the wax and moisture which it will be impossible to expel with any great amount of force or pressure.

So it is obvious, that, with methods heretofore in use, a certain amount of wax is locked up, as it were, in a safe, requiring a certain combination to open and release it. The writer claims the discovery of this combination, the principles of which may be surmised as follows, namely:

A construction in which the masses of slumgum within the device should be in comparatively thin layers, so that the wax has the shortest distance possible to move to become free therefrom.

A device in which the mass of slumgum can be pressed while immersed in boiling water so that when the wax is freed it will float to the surface.

A wax-extractor in which the pressure may be intermittent, and so arranged that when the pressure is released the slumgum or material may take up water like a sponge, which can then be readily expressed to carry out more wax and this operation repeated until all the wax has been expelled.

A wax-extractor in which the condition shall be the best

possible for the slumgum or material operated upon to take up water for the displacement of the wax.

A structure which readily and automatically separates the various layers of material operated upon and relieves the pressure therein when the press is released, so that the slumgum may absorb the water like a sponge in large amounts.

In practice the cheeses of slumgum rest on surfaces of wire-screen, the bottommost one of which rests on springs capable of exerting several hundred pounds of pressure, so that when pressure is applied the springs will continue to squeeze the masses of slumgum as the wax and water are expelled.

There should be several masses or cheeses of slumgum, each separated from the other by a slatted frame covered with wire-screen with a spring at each end to separate automatically the several masses or cheeses when the pressure is released. Above the uppermost cheese is a follower against which a screw works. The cheeses and slatted frames are contained within an iron frame-work which in turn is contained within a boiler of sufficient depth to immerse the cheeses in water. The water is boiled until all the wax in the slumgum is melted. Pressure is then applied, gently at first, to allow the wax and water to run out gradually. The wax floats to the surface where it will not be reabsorbed by the slumgum. The pressure is now released and the cheeses separate, allowing a free access of boiling water. Pressure is again applied and as the hot water is pressed out it brings more wax with it, which floats to the surface. The process of intermittent pressure is continued until the work is complete. By this method practically all the wax may be easily obtained; and in order that I may not be misunderstood I will construe "practically" to mean that not more than 1 percent of the weight of the slumgum, when the extracting is finished, will be wax. That is, in every 100 pounds of slumgum there will remain less than 1 pound of wax which this process will leave if directions are carefully followed. One test of slumgum, after treatment by my method, failed to reveal more than $\frac{5}{8}$ of 1 percent of wax, and the cheese from which the test was made weighed between 25 and 30 pounds and was 2 inches or more in thickness. It is not recommended that the cheeses be so thick when the pressing is finished, as the thinner the cheeses are the cleaner the work.

It will be observed that there is no opening of the extractor after it is filled, until the work is complete; no raking or pawing over of the slumgum to expose new surfaces and no excessive squeezing. The wax simply comes out with the water and floats to the surface under moderate pressure where it may be run off through a spout or be skimmed off with a dipper.

Great strides in advance have been made in apiculture continuously ever since the awakening which dates from Langstroth. Wax-production did not receive the attention its importance merited until Hatch, Gemmill, Ferris and the A. I. Root Co., took hold of the proposition in earnest less than a dozen years ago. Much has been accomplished in the intro-

duction of better methods, but the bee-keeping fraternity will not be content until it is able easily to obtain all the wax that can possibly be produced.

Have you 100 colonies of bees, and are working and musing along in a primitive fashion, trying to save the expense of a modern wax-extractor? If you are so doing, you are wasting, at a low estimate, the price of a good extractor every two years, which means that an investment in a modern wax-machine is worth annually at least 50 percent, besides the convenience in using it. If you have 200 colonies of bees you save the price of the extractor every year.

There is no doubt that over 25 percent of the wax heretofore present in old combs and cappings has been thrown away. In the aggregate, apiculture in America has thrown away hundreds of thousands of dollars worth of wax during the past 25 years. It is time we cease to waste our precious substance. Let's save our wax; it is needed in the sciences and industries, and a good market is always in readiness to take it.

O. L. HERSHISER.

Dr. Miller—Mr. Hershiser spoke of having a dish in an oven. I would like to know whether he speaks from experience, from observation, or from hearsay with regard to that?

Mr. Hershiser—Hearsay. I heard Mr. Abbott speak of it.

Dr. Miller—That would be so exceedingly objectionable. In the first place there would be the danger whenever the wax was melted down in the bottom, of it being over-heated. In the next place there is a very close relative of that, so that I think likely he has got them mixed in some way. That relative is putting a dripping pan into the oven, with one corner cut open and projecting out of the oven, raised a little at the back end, and the wax dripping out into the dish outside. That will hold 4 times as much as the machine mentioned, and be perfectly safe; and while I would not think of speaking of it as an important thing for rendering wax on a large scale, for very many who have only a little to do it is a method not at all to be despised.

Mr. Hershiser—If Dr. Miller would refer to the proceedings of the Chicago-North-western convention, two years ago this winter, when Mr. Huber Root had a paper on "Wax-Extracting," he will find that what I mentioned in reference to the oven process was described by Mr. Abbott.

I want to say another word; that the idea of using springs in the bottom of the extractor in order to continue the squeezing after you have turned the screw down, I got from what Dr. Miller demanded should be a part of a wax-machine, at that same meeting.

Mr. Arnd—This press Mr. Hershiser is talking of, is at our place of business. I think it could be demonstrated.

Mr. Hershiser—I have it up there. It is the first machine I ever made, and it is not a beauty, but it is effective. If any of you would like to see it you can go up there and look at it. Mr. Sherburne—I extract my wax practically without a press. It happened to me in this way: I had a

square pan for melting honey; it was made of 10-inch plank. When I had a lot of wax to extract I used it. I put in a lot of water, several inches deep, and start it going. When the water commences to boil I dump in the waste and cappings, and as they melt I take a piece of wire window-screen and put it on top of where the wax is accumulating and commence dipping. I melted all day and dipped as the wax came to the top. Perhaps nearly all of us have seen a sorghum pan boiling. The bubbles start from the bottom and come up through. You can call it a disintegrating process. Those bubbles will come up so fast, if the fire is adjusted properly, it will boil, with those bubbles over the whole boiling surface. As fast as the wax is melted, dip it off over in this other corner where it is not boiling. I have enough so that I can boil all day and dip all the time. By this disintegrating process, the boiling will take the slumgum all out. If you think it will not, try it, please. Now, at the last, I have a square frame to fit nicely, covered with common screen, and I drop it on that and load it down so that it will sink the whole of the slumgum below the surface. If you will let it bubble a while and let the fire die out, in the morning you can take off the remaining wax. The last 2 or 3 days I did that, there was practically no wax in the slumgum; and let me tell you, it would hurt me a good deal if I thought there was some there. I believe I shipped down 300 pounds of wax the last shipment.

Mr. Hershiser—Where do you reside?

Mr. Sherburne—Iowa; a very fine country.

Mr. Hershiser—From the fact that you produce 300 pounds of wax frequently, I would imagine you would have considerable slumgum, and I stand here ready to pay \$1 per 100 pounds for it. And I will pay the freight to Buffalo.

Mr. Sherburne—If the gentleman would come after it he could have it for nothing.

Mr. Hershiser—There are a good many bee-keepers that have been in the business a long time, and they are "dead sure" they get all that wax out; and it is just like this: They don't want to sell anybody a gold brick, or even give them one, but all the same, I met one of these gentlemen in St. Louis last summer, and I almost begged of him to let me buy his slumgum. He says, "There is nothing in it; I get all the wax out, and I would feel pretty bad if I didn't. But," he said, "I will send you a barrel of it, and you can try it; all I will ask you is to tell me how much wax you get out of it;" and he extracted it similar to Mr. Sherburne. About 5 weeks after I got back to Buffalo I wrote and reminded him of the promise he had made. He wrote back and said, "I have been extracting wax the last 2 or 3 weeks, and I have about 5 barrels and I will send you one barrel." He said, "If you get 2 pounds of wax out of that 1 you will not get 4 pounds out of all the rest." In due time the barrel came, and such a mucky looking mass I never saw. All the same, out of about 85 pounds of refuse that he sent me I took out 23 pounds of pure wax. I want *your* slumgum for the same purpose.

Mr. Hatch—I will give you a word of advice. Don't let him have it. I have been something of a crank on the wax question. I have talked to every beekeeper that has come to visit me, on the wax-press, and I heartily wish to endorse everything in Mr. Hershiser's paper. I have been using a press myself for quite a number of years, but I realized I wasn't getting all of the wax out, but I can say during the time since I have been using the press I have felt very well pleased. If anyone has 100 colonies of bees I would say that in one season he can pay for a good press by the extra wax he gets; and he gets it nicer. You won't have half as much fuss as this man here, that fusses all day. I can take his wax and run it over and get, I suppose, 25 percent of it, and have it all done in half a day, and have the wax caked and ready for the market. I say, get a wax-press. If you haven't got one, get a bench-screw and make one; it won't cost you more than three or four dollars, and the wax you get is what counts.

Mr. McEvoy—I would like to endorse Mr. Hershiser and Mr. Hatch on that. Mr. Hall used to sweat and work with his old comb, and thought he didn't lose a drop of wax. Mr. Gemmill wanted to bring down his press and try it, and after melting up the slumgum; dish after dish of pure wax came out. Mr. Hall said, "I want that." I have 4 presses, and I have loaned 3, but I could get use for 53 as soon as the people got to know them.

Mr. Ferris—I have had some experience in this line. The gentleman spoke of dipping the wax. I have dipped and dipped all day, and got out every bit of wax I could find, and I had about $1\frac{1}{2}$ bushels of slumgum. I constructed a wax-press mentioned in the "Review," and from that $1\frac{1}{2}$ bushels or 2 bushels of slumgum I secured 33 pounds of as fine wax as you could ask to look at.

Mr. Bartz—I want to say something in regard to wax-presses that has not been mentioned. Those who have not a wax-press, and who render their wax by the hot-water process, would do well to take the comb to be rendered, on a cold day, and put it through fine wire before they put it in the water. Take a sieve made of this common wire, and sift the wax or comb through this sieve into a coarse sack, and the pollen will stay in the sieve. Immerse this pollen in the water and weigh it down with a screen and I am pretty sure I can get more wax by the water-process than I can with the best wax-press now in use.

Mr. Hershiser—I desire to make Mr. Bartz an offer of \$1.00 a hundred pounds for his slumgum, and I will pay the freight on it; and I will say that to all.

Mr. Wheeler—I have had considerable experience with a wax-press and wax-extractor. I melt my comb in the Ferris extractor, and press it with the Swiss Extractor, and that works nicely. I have always had in mind something different. If I were a mechanic, and had a factory, I would try a scheme I have in mind, and that is of using the same force in extracting wax as is used in extracting honey, and use steam for heating, and use centrifugal force for extracting. I would like to try it.

Mr. Hershiser—Adhesion and capillary attraction will beat you on that proposition.

Mr. Hintz—I have been in the habit of getting my wax with a solar-extractor. I like that very well, except where we have to get it out of old black combs; and in my experience in that case I don't believe I get very much of the wax. I think perhaps a very large percentage of it remains in the combs. Whilst I have always gotten it out in the old way in water, in a kettle or something of that kind, since there has been so much said about their being so much wax left in the combs, I have rather come to the conclusion to keep my old slumgum.

Mr. Hatch—There is one thing we are overlooking entirely, and that is the advantages of the solar wax-extractor. I think every bee-keeper, especially an extracting man, should have a solar extractor. Not but what you can get all the wax out of the cappings by a press, but they work so easily and board themselves, and cost nothing for fuel. If you have made it on the plan suggested by Mr. J. H. Martin, or "Rambler," you will find your wax all caked ready for market right in the extractor. There is another advantage: You may bring the cappings just as dry as you can get them, and then melt them up for wax, and you will get an astonishing amount of honey out of those dry cappings if you put them into the solar wax-extractor. If you run 100 colonies of bees you will get honey enough out of the cappings to pay for the expense of a solar wax-extractor in one year.

Mr. McEvoy—Three of them.

Mr. Hatch—And if you want to be real careful and watch it, you can save that honey even for table use. As soon as it is melted draw it out and it is all right. If you leave it there it is stronger. I use it for feeding the bees. You can't afford to be without, first, a solar wax-extractor, and, second, a good press, if you are in the bee-business at all.

Mr. Stewart—I am very much interested in extracting wax. I am one of those poor unfortunate fellows that has a lot of foul brood, and that has given me something over 1,100 pounds of wax in the last two years. I have a solar extractor and also a Root wax-press; and while the Root wax-press is a good thing, I know that in my slumgum I buried up more than 100 pounds of wax; and for that reason I have been very much interested in the matter, and was determined to endeavor to find some method by which I could get some of that wax out. I ship each year into the New England States my honey, and go with it and sell it, and I formed the acquaintance of Arthur C. Miller, Rhode Island, and, last year, while there I had a talk with him, and he told me he was working on the lines of a wax-extractor. He said it was something different entirely from anything there was, and something that he had great confidence in, in revolutionizing the wax-tracting business. Going down to New York City, I stopped off this year, and saw Mr. Miller, and saw his machine, and he has it perfected, and they are manu-

facturing them now. He had as many fifty in the process of construction, and it is so different from anything else that I will endeavor to give you the process upon which he works. The wax-extractor is round, something the same as the Root press. It has an inside can, but instead of being perforated all around, it is perforated only at the top and bottom. That is immersed entirely in water, and there is a cover put on the inside can after it is filled, so that there is no possibility of any slugum coming out. Inside of that there is a shaft running down through the machine, and on that shaft there are flanges, and also on the inside can, and that is soldered fast. He puts a conical shaped cover, and so fitted as to prevent any leakage, and that goes up to a cone. Built out from this is a hot-water tank. There is a shaft running down to the bottom, as it is boiling he turns that shaft slowly, and in that process it grinds the slugum up as fine as possible. These flanges on the inside and outside can are arranged so that they come together, and they are made of perforated metal, and the slugum is all ground between them, and at the same time there is a pressure there that presses them. The kettle is boiling, and the hot water which is constantly fed, causes an over-flow at the top. At the top of the over-flow there is a spout that runs down through the hot-water tank to keep it hot; and the wax as it is liberated overflows and flows out at the bottom. Mr. Miller says he can get every particle of wax out of the slugum. If it will do what he says, it is a great thing for the bee-keepers.

Dr. Miller—I would like to ask whether Mr. Hershisser has made an offer for Mr. Miller's slugum?

Mr. Hershisser—I never received any offer from him, and never had any correspondence with him. Nevertheless, I would like to try some of his slugum.

Mr. Acklin—Instead of putting the sticky cappings into the solar wax-extractor, we moisten them with as little water as possible, and strain them and drain them every night, and that seems to give a sweetened water of the right consistency for vinegar. I think the vinegar is the best that can be put on the table.

Dr. Miller—Right in that line I had cappings down in the cellar and they were what you would call pretty dry cappings. But the moisture of the cellar will be attracted to them, and if you let them stay long enough there, you will find that you will get just about every particle of honey that is there. The longer it stays the longer it keeps dripping and attracting fresh moisture to it; and you will get it for vinegar or any use you want to make of it.

Mr. Holtermann—I have not much experience of value in connection with extracting wax, but I would feel like endorsing what Mr. Hershisser has said. The question came up, of the solar wax-extractor, and as far as cappings are concerned, I consider it very valuable, but it has one defect, and that is the constant turning to the sun; and for some years I have had a thought which I believe can be made practicable, and that is, to arrange to have some sim-

ple clockword device by means of which that extractor will, upon a pivot, turn itself towards the sun during the day, and will need no looking after in that direction.

Mr. Hatch—I don't change my wax-extractor more than twice during the year. You must have a different kind of sun in Canada from what we have here! My extractor is 3 feet by 4.

Mr. Baxter—The cellar will have to be very damp to get vinegar that way. I have about 10 barrels of cappings in my cellar now. Some of it I washed last winter, and when I got within a foot of the bottom of the barrel it was a solid mass of cappings and candied honey. The only way to get it all is to wash it.

Dr. Miller—That mass of cappings will be held there and the moisture can't get to it. With a smaller quantity there is plenty of chance for the moisture to get all through it.

Pres. Dadant—We would not depend on the moisture in the cellar to moisten our cappings; we want to wash them thoroughly first.

Mr. McEvoy—I had nearly 400 pounds of honey from cappings burned as black as buckwheat. I can make use of that. I have a long capping tank, but, for all that, there is a lot of honey that melts down, and it is too dark to be good honey, so I save it up till spring and thin it with water, and between fruit-bloom and clover I feed the bees with it.

Mr. Frank—I would like to ask Mr. Hershiser a few questions. It is labor-saving that I have been seeking for as much as anything, and I thought I had found perfection in the solar extractor. Now for extracting or rendering wax from cappings, would you think, considering the labor you are saving, that your device would be profitable?

Mr. Hershiser—I used to use a solar extractor, but of late years, since I have been using the wax-press, I discontinued its use. I don't know whether that is a wise thing to do or not. It doesn't take very much trouble to get all the wax out of the cappings with your press. Of course, where you use the sun you save that much fuel. I save labor in reference to the cappings by using my press, from my standpoint.

Mr. McEvoy—You lose the honey in that case.

Mr. Hershiser—I don't know. I put my cappings out a great many times and let the bees carry away the honey. Last year I washed the cappings and got about half a barrel of nice sweetened water, and I tried to make vinegar out of it and it is in the cellar yet, and it doesn't seem much like vinegar.

Pres. Dadant—The experience of each man is different in different locations. There is a difference between the sun of Utah and Canada.

Mr. Wilcox—I have a sun extractor 3 feet by 7, and I save a vast amount of honey from it. My broken combs and wasted honey of every kind go in there, and by drawing it out before it gets too hot it is fit to market, especially that market you will find among wholesale bakers. You can sell scorched honey there at any time, because they must

necessarily heat it in baking, and do. The amount of honey you save in melting up the cappings is quite an item.

Pres. Dadant—We will now take up the next subject by Mr. Holtermann, of Canada.

MIGRATORY BEE-KEEPING

Mr. Holtermann—As to migratory bee-keeping, there are those who carry it on in one sense, and, again, others who carry it on in another sense. I may say I have read more or less of the European bee-literature with profit, and in Europe migratory bee-keeping, the moving about from one section to another has been carried on to a greater extent than upon the continent, and I believe it is a line in which we can receive instruction from others; and after receiving hints and suggestions we can get from Europe, with all due respect to European bee-keepers, we in this country can improve upon their method as a rule, because we are practical to a greater extent.

First of all comes the question whether it shall be carried on at all or not. In my estimation every specialist should in a sense carry on bee-keeping in that way. Unless it be in a section of country foreign in nature entirely to my own and that which I find in the Northern States, no specialist should create permanent large apiaries to any extent. I find conditions vary from year to year so much that it is desirable for one who makes a special business of bee-keeping to be able to go to favored localities.

In our Province the year before this the clover was largely killed out; it had been killed out by thaws, snow and rain, and then the freezing in of the clover and smothering. I had intended to go to a certain section. I had my super-combs arranged for that purpose and I found out by going to a section of country where there was very rolling land I could get a fairly good clover locality, whilst if I had remained in the territory which I originally intended and had before gone into I would have had no clover surplus at all.

Again, you know the rainfalls vary in every locality. Even within a few miles you can go and get quite a difference as far as rainfalls go. In the heavy clay lands, if in the early part of the season, you get a shortage of rainfalls; it takes more rain to bring that ground into condition for yielding honey than it does upon the lighter soils; and one should be always ready to pack up and go from one section to another.

Again, I find if you get into a section of country where there are good early flows, that then you can not in that same section get good and heavy late flows, and for that reason for the specialist, if he can move an ordinary distance, say 40 miles, he can secure a larger yield, and in that case I would advocate the moving about of the bees. Each person must decide for himself after studying up the conditions, whether he shall practice this system of bee-keeping or not. To a certain extent, it is his own business as to whether he shall practice it or not; but it is everybody's busi-

ness as to *how* he shall practice that. We have had some discussions in our American bee-literature as to the advisability of moving bees when the hives are open; and I feel very strongly upon this subject, as to whether he shall do it or not; and I do not hesitate to say, after years of pretty extensive experience in moving bees, that it is a very great mistake to attempt to move bees with open hives. You know that as far as bees are concerned, they rarely do any harm as far as life is concerned; that if anywhere upon this continent a life is lost through the stinging of the bee, it passes through the whole press of this continent; whilst with other live stock there are so many accidents happen, and they are so common, that the incident is not mentioned, or is only of local interest.

Now, I know what I am talking about, because my system gives me a chance to know just what bees will do as to coming in and out of an entrance. I am willing to admit, if you get your bees started safely and are on the move, the bees are not likely to come out. But I also know that you never know at what moment you may have to stop, and then, when you start again, you do not know whether you are going to get into trouble or not.

I have a permanent portico upon this hive; it may be attached to any hive. At the entrance of my hive a screen is slid down in front, and I know just *exactly* how the bees will act when the entrance is open, or is not open. When we first start the bees will come out; they pass really out of the hive and come to the entrance and will circle about in the screen, in that portico, depending upon the temperature and strength of the bees, and so on; they will either stay there or go in again; and you can go along the road and see, perhaps, sometimes, no bees outside of the hive; but you stop, and then jar your wagon, or whatever you have, and start up again, and that is the time when the bees come out and the time that the danger exists. Now, in moving bees we want to have everything arranged as expeditiously as possible; we want to be able to pack up and move at any time, and the device I have at the front of the hive is with that object in view. I have found the matter of screening bees in the hive, or by having screens above or below, is a very different thing in principle, to having a screen out at the front, the way I have it. When the hive is barred, the bees can come out of the entrance; they don't seem to feel the confinement in the hive and they act in a different way from what they do if the screen is close to the brood-chambers. With the ordinary entrance the bees in their efforts to get out, pack against that screening and shut off ventilation. In this system, when we are going to move, we put on the screens during the daytime and the earliest moment at which you can get away in the evening is the desirable one. If you can close your hive, and load up, and get away, before dark, you are a great gainer of time. So, in practicing this system of moving about, we put in the screen in the hive in this way, then, towards evening, when the bees begin to discontinue flying, we take the colo-

nies, those that are the earliest ones to quit, and we simply drop the screen in place, put a tack here, and the operation is finished; and in ten minutes we can have our bees loaded and move away. We load upon hay-racks because they are available at almost all times, and it is a very nice way to load them. We put three across in the wagon and put plenty of hay in there; and by means of the rack and hay or straw we get sufficient spring to keep the comb from breaking down. We load them up with one row in the center, and one either side, and move away. In such a way I have tried to plan to do this work as expeditiously as possible. I have no bee-space in the top of the hive. And I think you will find it an advantage in having it below rather than above. In our practice we must simply and quietly judge by what means we can get the largest number of advantages to suit our own case, and then adopt that. And for that reason, after carefully weighing, I decided on not having a bee-space above, but rather below; and through the screen excluder, or super, or cover, what ever it is, by not having the bee-space above, even if you have not got frames where the sides are self-spacing, you can keep them from rocking.

Our covers are arranged in this way: I don't intend to blame the supply dealers. A supply dealer cannot waste his energies in educating bee-keepers; he has to use his energies in supplying goods and putting them upon the market, and he can't go ahead of public opinion. As long as bee-keepers are content with a $\frac{7}{8}$ -inch board cover so long he must give it to them. The cover which I use here is a $\frac{3}{8}$ -inch board with a $\frac{3}{8}$ -inch lining, and this is filled with felt paper, which is a great non-conductor, and is of very great use in either cold or hot weather. This is a felt underneath which I imported from England for the purpose. It is tacked on the cover and it rests on the hive; and then we have this galvanized-iron top which is good for 25 years. It costs more, but eventually it is cheaper; having put that cover on, by simply driving a nail at either side it is closed. Of all the things I have tried I have so far succeeded in getting no better method than a very crude one, and that is simply the stripping up the sides of the hives in order to connect the upper stories and the brood-chamber. This year I moved bees 4 or 5 times during the hottest time in the summer—August.

For several years I moved with two supers on quite frequently, but the most practical method I have found so far—I haven't succeeded with clamps—is simply to strip up with a lath—one on each side and one at the back, in order to keep the different things together. In doing that there is more or less of nail driving.

Dr. Miller—Do you object to the common staples?

Mr. Holtermann—I have used those. I have never had any accidents with them, but after using them I came to the conclusion that it was not quite safe enough for me, so I abandoned them again and used the lath. A hive might get broken up. I don't want anything to happen, and that is the reason why I left the staple and used the lath.

Dr. Miller—I have used both the lath and staple for years, and I have had more trouble with the lath coming loose than the staples.

Mr. Holtermann—That is a matter you will have to decide for yourselves. I want to say to those of you who have not practiced this moving about of bees, if you want to know what hard work is, begin that line of business. In my estimation, to simply set down the bees and run them for one season in one place is play, when you compare it with what you get when you have to move your bees about, and perhaps be up all night some times, and carry on the business in that way. But in my estimation there are many localities where you can get much better results by moving them. No one should do it unless he knows *how* to do it, and follow it up carefully and watchfully.

In moving, the bees get restless in hot weather, and perhaps you have seen them, when they were screened, with their tongues out through the screen. Now, we water our bees, and in moving them I think it is exceedingly important. Give the bees sufficient, and you will be surprised how they will quiet and cool down under those circumstances.

I also find a peculiar characteristic of the Italian bees in this respect, and that is this: Of the blacks, hybrids and Carniolans and Italians, the Italians I found were the only bees, when they got very restless or very excited and began to run about, that would actually turn upon one another and sting one another to death right in the hive; but by watering you can always stop that, and overcome these difficulties. I believe by not watering them you might have very disastrous results by having them destroy the brood. The time will come when they will suck the food from the young larvæ, and in a very short time destroy a number of young bees.

Mr. Abbott—How many pounds of honey do you get from your hives from those 5 moves?

Mr. Holtermann—In the Farmers' Institute, when they asked that question, I replied by asking them, How much milk do you get from your cows?

Mr. Abbott—I get about 2 gallons from mine.

Mr. Holtermann—It is a very long and interesting study. Clover does well upon clay soil. I don't believe under proper conditions there is any soil it will do as well upon. When you turn around again to buckwheat, I used to say, the better the soil the more yield you will get from the blossoms. It depends upon the nature of the blossom. You have got to get down to the kind of soil that the plant will do best upon. This year has been an exceptional year for me. I have had from 296 colonies of bees over 60,000 pounds of honey, and I have done no feeding. My 12-frame Langstroth hives will average 85 pounds going into winter quarters. But I don't want this convention to think, and Mr. Abbott knows well it is a question you can't answer—to get the best results out of it, you have to be a careful observer.

Mr. Abbott—On a chance estimate what would you get? 200 pounds?

Mr. Holtermann—No, not when I say this was an exceptional year with me. But I think the members of the convention here will justify me in saying that I could not give an honest and sincere answer to that question.

Dr. Miller—Do you use the cover altogether, regularly, in that way?

Mr. Holtermann—I use it regularly in that way.

Dr. Miller—Will you give us about the cost of the two parts?

Mr. Holtermann—This thickness of galvanized iron can be bought for a 12-frame hive, made up, for about 17 cents. The rest of the cover would be about the cost of your hive; and the felt paper, you will have a pretty good idea of what felt is worth in your country. I don't want you to figure that cost with a $\frac{7}{8}$ -inch ordinary board. In the spring of the year there is heat escaping from that, and you know how often, if there is a lot of frost, you find that no frost has fallen upon the cover, and that indicates the heat is passing off from that cluster at that time of the year; it is a very expensive cover, if that is the case, because you are not only using honey that is required to produce that heat, but the vitality of the bee is being exhausted. If that were all it would be sufficient, but, more than that, you are curtailing the capacity of those bees by using that kind of cover.

Dr. Miller—If there is any part of the hive that I would not economize on it is the cover.

Mr. Holtermann—When you go into the dairy business you are not looking around for \$25 cows, but for the cows which for the least amount of food and looking after will give you the greatest returns; and just so soon as beekeepers will look at matters from that standpoint, so soon will the supply dealer give them something better than he is giving them today. There are little unevennesses in your combs and quilt, and so on, and if you have a plain wooden cover over them there must be more or less spring out at the sides. With this soft felt there is sufficient "give" to it to overcome this unevenness, and the cover fits down more closely.

Mr. Putnam—Did you ever use wool-twine to tie around to hold the hive together?

Mr. Holtermann—No, I have read of it, but I wouldn't want it. When I start I want to be sure I am not going to have any accidents.

Mr. Abbott—I was thinking while Mr. Holtermann was talking about the people who were interested in that kind of thing, how many there were of them, and how practical it was; and I tried to get at the practical side of it by getting a direct answer from Mr. Holtermann. Now, while it may be applicable in Canada, I wanted to see if it would work in Missouri. I know how much honey we get down there without migrating, and simply sit down and stay there. I migrated for about 20 years of my life, and I was sick, and \$150 worse off than nothing, until I sat down and began to do things, and then I found myself in better conditions. It was a question with me whether this migratory bee-keeping might not be an expensive amusement.

Mr. Holtermann—It would be very expensive if it were an amusement.

Mr. Abbott—I wanted to find out whether Mr. Holtermann was pursuing this line of action simply because he found satisfaction in it, and was solving problems he wanted to solve, or whether he believed it was of practical utility to all the bee-keepers in the United States and Canada. Down in Missouri we can get from 150 to sometimes 250 pounds of honey from a single colony of bees if the clover yields well. When there was plenty of basswood, 150 or 200 pounds was nothing. Now if Mr. Holtermann doesn't get more than that it seems to me it would not be practical for us to move if we would only get honey to the extent he would get. He said all of this boxing-up business, and so on, would be ready in ten minutes, but I question if he can get ready to move for less than a dollar per hive every time he moves.

Mr. Holtermann—Did you have this kind of device?

Mr. Abbott—Yes.

Mr. Holtermann—I doubt it.

Mr. Stewart—I moved 90 colonies of bees 7 miles a year ago last fall, and it cost about \$10. I moved them out of a location where there was no possible show of their getting any surplus honey at all. I got from that apiary 1,500 pounds of honey after I moved them. You can figure whether it paid or not.

Mr. Holtermann—I have been practicing this for 4 years, and if I am in the bee-business another 4 years, and have the necessary health and strength, I shall likely practice it. I keep a careful record of all my expenses, and I know at the end of the year what I have.

Mr. Baxter—I know in Illinois that the moving of bees has paid under certain circumstances. I have seen it done.

Dr. Miller—I would not be fool enough to spend money moving bees 5 or 10 miles in any direction, no matter whether I got at home 50 pounds or 150 pounds, because I wouldn't gain anything by it. There wouldn't be anything more to get where I moved them. But it is not a question whether at home I got 150 pounds or 20 pounds, it is a question as to whether I get more somewhere else. Now, if there is somewhere that I can go to where there is a yield of honey and none at home, I might make money by moving, even if I were to have 150 pounds at home.

Mr. Abbott—It is all right to discuss these things, but is there anything in it for the great mass of bee-keepers?

Dr. Eaton, of Chicago, then addressed the convention as follows, on,

THE DIETETIC AND HYGIENIC VALUE OF HONEY

The paper that I have prepared is perhaps of more value or interest, or was prepared more for the general public than for bee-keepers, because I suppose all of you are wise enough to use plenty of your own product; in that respect being different from the dairy farmers of Holland, who sell their fine, high-priced butter, and import *oleomargarine* for their

own use. I hope it will have some interest for bee-keepers.

Food-stuffs are divided into three great classes, protein, fat and carbohydrates. Honey belongs to the carbohydrates. On a strictly scientific bases standards have been prepared showing the amount of each of these food-stuffs a given animal doing a given work should consume. Using Atwater's standards, we find that if honey supplied all the fuel except that derived from protein, a man could eat two and eight-tenths pounds, or in round numbers, 3 pounds of honey per day. This is using strictly the amount of food necessary to maintain man in perfect health as determined by scientific experiment. As a matter of fact, it is probable that a smaller amount of protein in connection with carbohydrates will suffice for body maintenance.

A late investigation by H. Labbe, shows that a healthy man may maintain nitrogen equilibrium on from 1 to 14 grams of nitrogen per day—an amount much less than required in Atwater's standards. Luigi Cornaro, a Venetian nobleman, lived to a ripe old age, subsisting during the last 50 years of his life on less than 12 ounces of solid food a day, and a part of the time on but one egg and a bottle of wine a day. Edison, the inventor, recommends food reduction, and claims to have subsisted for a time on 12 ounces of food a day.

If less protein were employed in the diet, more honey could be used. Of course, it might not be practical to replace all fats and carbohydrates by sugars for an indefinite period, as nature has provided means for the digestion of fats and starches as well as sugars. However, *this* is undoubtedly true as regards the substitution of sugars for fats and starches:

(1). That sugars are more quickly assimilated than any other food, and the energy derived therefrom is more immediately available. For this reason sugar in the form of candy is employed in army dietaries, and especially in emergency rations. Queen Victoria's present of chocolate candy to the British soldiers in the South African War was more than a demonstration of her affection and gratitude; it was an illustration of applying the discoveries of science to practical use. Honey might be used much more freely than at present in soldiers' rations.

(2). The digestion of sugars is performed at less expenditure of energy than other foods; in fact, some sugars are immediately and in natural form taken into the blood. Glycogen, the emergency food of the body, manufactured and stored by the liver, is itself a sugar. Sucrose merely requires splitting into dextrose and levulose. Commercial glucose and honey is practically predigested. Milk-sugar is so easily digested as to be nature's food for the young.

(3). Sugars increase the flow of saliva and other digestive ferments, or more properly speaking, "enzymes," and thus stimulate appetite and aid the digestion of all food. It was once thought that the rapid assimilation and muscular activity shown on feeding sugar was due to this stimulation, but experiments substituting dulcin, saccharin and other

sweet substances devoid of food value for sugar, proved that such was not the case. The influence of sugar on the digestion of other foods is, however, a strong argument for the generous use of sugars in the dietary.

(4). Sugar as pure sucrose or as honey is a most concentrated food. Sugar contains practically no water, mineral or other non-digestible impurities, and will keep in perfect condition in any climate.

(5). Sugar is even an economical food. The cheaper varieties of candy, such as stick candy and those so freely advertised at 15 cents a pound, and honey at almost any market price, may displace many carbohydrates and fats at an actual monetary saving. Butter fat, olive and other oils are more expensive, and so are the fats in high-priced meats and poultry. Many vegetables, especially out of season, although greatly inferior to sugar in food value, commanding more than 15 cents a pound, however, can replace even the cheaper varieties of starches at an economic saving.

It has been argued against the use of candies, honey and other sugars that they create digestive disturbances; that they are deficient in iron, lime and other inorganic salts necessary to nutrition, and that they injure the teeth. The first objection may be true in *some* instances with *particular* individuals, and undoubtedly not too concentrated solutions of sugar should be digested at a time; the same may be said of other favorite food materials. The objection that sugar contains no inorganic salts is not worthy of notice, unless sugar were to be employed as a food to the exclusion of all other foods. This, of course, is impossible, because sugar cannot supply the necessary protein. When sugar is used as an auxiliary to other food, as it should be, the objection has no weight, as iron and lime are only found in relatively small amounts in the human body and most articles of food contain all the mineral ingredients the body demands, and more.

The prevailing idea that sugar is especially injurious to teeth is probably erroneous, as the West Indian natives, as well as the darkies in the sugar belt, where naturally much sugar is consumed, have exceptionally good and sound teeth. Exposed nerves are sensitive to sweets, as most mature people know through sad experience. This, however, does not argue that sugar caused the decay. Sugar, like other organic material, will decompose with the formation of acids, such as butyric and lactic, and it is undoubtedly proper, wise and Godly to use a tooth-brush and antiseptic mouth-wash occasionally, whether sugar, honey, candy or other foods are eaten. Sugar, however, is so completely soluble that it would seem that there would be less danger of decomposition in the mouth with it than with other less soluble foods.

In conclusion, notwithstanding the fact that the consumption of sugar has greatly increased in the most progressive countries, reaching almost 100 pounds per capita per year, and in the form of glucose, honey and other sugars, much more than that amount, I see no reason from the standpoint of the physiologist, chemist, or dietist, why sugar in the form of pure candy, honey or other wholesome sweets might

not be used much more extensively than it is now, to the satisfaction, and not to the physical detriment, of the people.

E. N. EATON.

Dr. Miller—Most of us came here to learn how to get more honey and we listened to that sort of stuff all day long. But I want to tell you if you can get more of this stuff before the people, so that they will know a little better than they do the facts that Dr. Eaton has been giving us, you will find a better outlet for your honey; and if you can get those facts published in the papers generally, it will be worth a good deal to you, in your local papers and anywhere else. I would like to sit down and study that thing; I don't know enough to swallow it all down just as he reads it off there.

Mr. Root—I would like to know what you consider the comparative value of ordinary commercial glucose and honey as a food?

Dr. Eaton—I made no distinction in the paper between ordinary commercial glucose and honey. As to the food-value of them, they are perhaps something similar, although I should think the honey would have the greater food-value. Commercial glucose contains one ingredient the same as honey, and that is dextrose; but dextrin is not a sugar proper, and, therefore, does not have as great a food-value as honey. I think I am safe in saying that; although I don't know of any experiments that have been made that are directly upon that subject. But my impression is that dextrin is not as digestible or as valuable as a food as sugar proper; and therefore I would say honey is of more feeding value than glucose, even just considering the solids; and usually glucose contains considerably more water.

Dr. Miller—There are certain things in commercial glucose that make it commercial glucose instead of *chemically* pure glucose. Supposing we can get those things out of commercial glucose that would make it *chemically* pure, and put them into honey, how much do you think that would improve the honey?

Dr. Eaton—There is so much confusion in the use of the terms "glucose" and "pure glucose," that I don't believe I can answer the question. When I refer to glucose I refer to the commercial product which is obtained by the action of acids or other material such as *inverts* and ferments upon starch; and that product is only partially composed of sugar—composed of dextrose and dextrin—if you would say pure glucose in the meaning of pure dextrose, it was once a synonymous term with glucose, then I don't believe there would be any great difference in the feeding value of pure dextrose and honey, because there is no difference in the composition or feeding value as far as I know between dextrose and levulose, which are the sugars which compose honey; and so if you add just one of those sugars to honey there would be no difference in the feeding value. But using the term commercial glucose you have quite a different proposition, because there you have dextrin, which is a gum and not a sugar, and not as digestible as dextrose; and in addi-

tion to that you have perhaps some *sulphurous* acid in glucose which would interfere with the problem of digestion of the glucose very materially, in my judgment.

Mr. Whitney—I notice the Professor speaks frequently of sugar. Do you mean sugar as we find it commercially sold, or is it sugar such as we find it in honey, and in the commercial world?

Dr. Eaton—I use the term sugar as a generic term, covering a large number of sugars; and if I should use sugar in the sense perhaps that you are more accustomed to using it, meaning cane or beet sugar, I would use the term sucrose, chemically, to determine that sugar matter—sugars that have been obtained from the cane, and maple, and palm tree, and also, to some extent, in other vegetables. But there are a great many other sugars, as the generic term implies; we have the levulose and dextrose; those two sugars are found in honey. We have the dextrose, that is found in commercial glucose, and then we have milk-sugar which is very similar to cane-sugar, and a large number of other sugars which are not so well known; but, so far as I know, there is no great difference in the feeding value of these different sugars. Certainly there is no difference in the fuel-value of the different sugars. That is, one sugar when burned should create just about the same amount of energy as another sugar when burned. That is practically what occurs in the human body. But there may be yet some difference in the digestibility of these different sugars, and there probably is, as milk-sugar has been found to agree better with infants than other sugars.

Mr. McCain—A great many intelligent people are opposed to their children eating a very large amount of sweets. If I understood the doctor correctly, he advocates the consumption of a larger amount, and I think in his paper he put pure candy and honey on a level, and spoke of them together. Now, Doctor, shall we, as bee-keepers, and educators, advocate the consumption of a large amount of sweets against the prejudice of intelligent people?

Dr. Eaton—I do not see why you should not, from a scientific standpoint; nature craves it, and children want their sweets, and I don't believe there is any harm in it, provided you use the pure article. There are a great many of the cheap, inferior candies on the market that I do not think should be placed in the hands of children. But giving them pure sucrose candy, honey-candy, or anything of that variety, and allowing them to use it judiciously, I believe it would be used to the benefit rather than the ill health of the children, providing they were fed on other foods to balance the candy rations.

Mr. Holtermann—I should like to ask Dr. Eaton whether the fact that the bee inverts a very large proportion of that honey, and, therefore, in that respect it is quite different glucose, wouldn't it have a very marked difference, not in the chemical value of the product as a food, but in its availability and liability to be digested?

Dr. Eaton—As far as dextrin is concerned, I should

think that would be true; but I don't see any reason as far as the dextrose is concerned, why the dextrose obtained by the inversion of sucrose would be greatly different from dextrose obtained from *hydrolysis* of the stock.

Mr. Root—There is one question here, and it seems to me we are getting to the pivot of an important matter. Dr. Eaton is a chemist greatly interested in the study of bee-keeping. We bee-keepers have said, and we have been taught by certain authorities, that honey is much more easily assimilated than ordinary pure candies. I want to ask whether Dr. Eaton thinks that is correct; whether we have been incorrect or whether we are right on that.

Dr. Eaton—I believe I said in my paper that honey was a partially predigested sugar. Sucrose is not. Honey is properly and originally obtained from sucrose in the form of nectar by inverting the sucrose. Now that is exactly what nature does in the human stomach before it can assimilate the food; and, therefore, honey is a partially pre-digested food, and in that respect is superior to sucrose.

Mr. Chantry—I just wanted to ask the Doctor if glucose could be bought for 4 cents a pound, that we find in stores all over the country, how much could be got for honey for family use? What would be the relative value of that sugar and good table honey?

Dr. Eaton—You would pay a little more from a food-value standpoint; but I don't think you want to estimate the comparative value of honey and glucose in that way, because the value of honey is not altogether its food-value, any more than the value of the higher-priced candies. You pay 60 cents a pound for the best candies, which are no more nutritious than sugar you can buy for 5 cents a pound. There is a value to honey that is different from its feeding value, and that is the value of taste; so that I would not want to estimate the comparative value of honey and glucose altogether on a feeding-value basis alone.

On motion of Mr. Kimmey, seconded, by Mr. Abbott, the convention adjourned.

SECOND DAY—EVENING SESSION.

At 7:30 p. m. the convention was called to order by Pres. Dadant.

The Secretary stated that Dr. Howard had written to him that owing to pressure of business, and so on, he was not able either to come to the convention or prepare a paper.

Pres. Dadant then called on Dr. E. F. Phillips, of Washington, D. C., to read his paper on,

EXPERIMENTAL APICULTURE

It will be well, in the beginning, to find out what the title "Experimental Apiculture" means, for it may be that the thought which first comes to the mind of most persons on hearing these two words is, after all, not what is expressed. When the Secretary of this Association wrote, ask-

ing for a talk on this subject, I had only a vague idea as to what I ought to say, but, on thinking it over, this indefinite idea was changed into one more definite, and I came to the conclusion that some ordinary views are incorrect concerning the terms of this subject.

First, let us consider what apiculture is. It is at once answered that, apiculture is bee-keeping. That is true; but all kinds of bee-keeping are not included under the term apiculture. Our fathers owned bees and every fall gave "sulphur treatment" to every skep of bees that would probably not winter. Was that apiculture?

A better definition would be that apiculture is beekeeping with improved methods, which enable man to get the results of the labor of the bees with the least expenditure of labor, and the least loss of bees. That is nearer correct, but there are one or two popular fallacies which, I think, need correction.

It is a common thing in the current bee-keeping journals and standard books on apiculture to see some special method upheld on the ground that it is "Nature's way," and one of the most common criticisms of new methods is that they are "contrary to Nature." Let us examine this form of criticism. "Nature's way" for bees to live is in hollow trees or caves; there are no movable frames, no sections, no supers to be added; queens are never introduced, honey is never extracted, the brood is never shifted, and queens are never shipped. Do we then keep bees according to "Nature's way?" Most decidedly not. Modern apiculture is, and should be, made up largely of methods and practices which are very decidedly different from those of natural environments.

But it may be answered that these things make no difference, for only such things are done as are easily overcome by the bees, and, in all the essentials, we still allow the bees to act according to their instincts. We are now approaching the true conception. It may as well be recognized at once that apiculture is the economic keeping of bees in such a way that the greatest benefit to man may be derived from them, and only such deviations are made from natural methods as can be overcome by the flexibility of the instincts of the bees. We are justified in going just as far as we possibly can from natural methods if necessary, if in so doing we do not overreach the limitations of the instinct.

Care must be exercised, then, in trying new ideas in apiculture, that we do not weaken the vitality of the bees or lessen their productiveness; but, on the other hand, by years of experience it has been shown that man has in many cases made conditions actually better for the bees by wise deviations from nature. I argue, then, that there is no justification in this everlasting harping after "Nature's way," but we should have done with this idea, long ago discarded in most other lines of breeding, and settle down to improve on Nature, as man has done, and is doing, every day and in all fields of labor in this pushing age.

Let us, then, define apiculture as the science which takes into account the habits and adaptations of the instincts

of the honey-bee so that by deviations from Nature man may increase the productiveness of these instincts for his own good.

So much for apiculture; it is now time to find out what is meant by "Experimental Apiculture."

An experiment is a "trial or special observation made to confirm or disprove something doubtful, or an act or operation undertaken in order to discover some unknown principle or effect, or to test, establish, or illustrate some suggested or known truth." There are plenty of unknown things in apiculture even if some contributors to bee-keeping journals write as if this were not so, if they would but tell all they know! Our knowledge of bees is really very limited. Little is known concerning the parthenogenetic development of drones and the determination of sex; practically nothing, of the finer structures of bees, and very little concerning the principles of breeding. There is an abundance of good and valuable work yet to be done on the purely scientific side of bee-life, but Experimental Apiculture, as I understand it, deals with a dollars-and-cents proposition, and the thing which appeals most strongly to the bee-keeper is more pounds of honey. In discussing this subject I propose to deal entirely with the practical side; and the work suggested is intended to lead to commercial results. The bee-keeper can, for the present, do without much theory, but he needs money. I firmly believe that a greater theoretical knowledge would be of benefit to bee-keepers, and more work of this kind would benefit apiculture, at least indirectly, but there is still so much of vital interest to be done along practical lines that we can confine ourselves to that in the short time allotted for this discussion. What is wanted, then, is more honey, and to this we must bend our energy. Instead of speaking about Experimental Apiculture in general, it may be better to give special instances of desirable experimental work in apiculture.

One of the first things which seems to warrant mention is the need of better methods of queen-rearing. Enormous strides have been made in this branch of the apicultural industry in late years but, after all, the methods are crude and too uncertain. During the past summer I have tried, several times, every method of queen-rearing of which I knew, in the apiary of the Bureau of Entomology, and have succeeded in rearing good queens with all of them, but there seem to be some faults in all, and every point at which there remains a chance of failure should be examined, and the method improved if possible. After these trials, I conclude that artificial queen-cells will yield more uniformly good results than natural cells, because the environment is more under the control of the operator; and that mating in nuclei is much preferable to the use of large colonies in decreasing the labor necessary; but we need improvement in our appliances and methods of manipulation. We want more uniformity of result, a decrease in the necessary manipulation, and greater assurance of success, and these, it seems to me, are the things for which to

work. The most urgent present need, it seems to me, is an improved combined nursery-and-introducing cage, and a style of mating-box which will rarely require refilling during the entire season, and practically no feeding; and these two things will receive the first consideration in our apiary.

Bee-keepers should know that bees, left to themselves, will not always rear good queens, and the only safe method is to re-queen at least every 2 years, and preferably every year. This is preached enough, I know, but a small percent of honey-producers practice it, I fear. It need scarcely be added that, a *sure* method of introducing queens—not necessarily one said to be sure, whereby there would be no failures, or even fewer—would result in the saving of several thousand dollars a year to bee-keepers.

The improvement of forage is another thing which needs attention, but this must be dealt with by some one else, for my present work is necessarily confined to entomology, and botanical subjects do not come directly under my supervision. I feel, however, that there is much to be done here. New plants can be imported which will be of great value, no doubt, and, above all, our present forage can be improved in nectar-secretion.

There is room for improvement in hive-appliances, extractors, forage, and other things, but the one place where there is the greatest need for improvement has been generally neglected by bee-keepers; I refer to the improvement of the bees themselves. All bee-keeping is pre-eminently breeding work. The honey is the product and the ultimate object of the industry, but the working problem is strictly one of breeding. The bee-keeper can increase his output by improvement in two places: first, in the manipulation and food supply; and, second, in the bees themselves. Manipulation and food supply are being discussed continually, but we get very little real information on the improvement of bees. I do not refer now so much to the introduction of new races, but, particularly, to selection of breeding stock.

The Italian race of bees was introduced into this country about 1860, and the credit for this important introduction need not concern us at this time. The important thing now is to examine the situation to see how much this race has been affected by breeding in the hands of the bee-keepers of this country since its introduction. From about 1860 on, there has been, in some quarters, an interest in breeding this race for color and this has been done very successfully, several different breeders having taken up this line of work and succeeding, by selection, in producing 5-banded Italians. As an example of what can be done by careful selection among bees this work is of value to us. Other breeders have selected for gentleness, and, since this character is not as measurable as color, it is harder to make definite statements concerning the results obtained, but it is evident that, either intentionally or accidentally, some good has been done along this line.

But the main object in the keeping of bees is honey-production; how much has the average output per colony

been increased in the past 45 years? Every bee-keeper knows that the more populous the colony during the honey-flow the more surplus honey stored, other things, such as honey-flow and weather, being equal. The problem, then, reduces itself very largely to the fecundity of the queens, and the question may be changed so as to ask how much the prolificness of Italian queens has been increased in the past 45 years.

Another very important factor in honey-production is the eagerness with which bees go after nectar; and a third is the tongue-length, enabling them to reach the nectar in long corolla-tubes. Italians lack the eagerness which is possessed by Cyprians, but there are Italian colonies which have it to a marked degree. Several strains of long-tongued or "Red Clover" Italian bees have arisen in the past few years, but what is the history of the strains? When a queen is sold and introduced into a honey-producer's apiary, before many generations, the progeny cease to work on red clover, if they ever did; for the reason that proper selection is scarcely ever practiced, and there is not close enough in-breeding. This is certainly due to lack of proper methods in following up the breeding.

We may conclude, then, that prolificness, vigor, and tongue-length, which frequently appear in Italian bees, are not ordinarily used to proper advantage by the majority of bee-keepers. Anyone reading the reports of the early Italian importations will see that the average per colony, throughout the country, is not much better than it was 45 years ago, and in some strains there is reason to believe that it is less. Of course this is not true in certain apiaries, but I feel sure this holds for the country in general, and I am inclined to think that prolificness in some strains of this race is actually decreasing.

It is natural that we should want to know why this is. There is but one answer, it seems to me, and that is that queen-breeding in honey-producing apiaries, is usually not done with a knowledge of the common principles of breeding as practiced on other animals and on plants. Careful breeders of almost every other form of domestic animals know to an ounce what their stock produces, but how many bee-keepers can give this sort of a record? and it is commonly recognized by breeders that without records they work in the dark.

Breeding of both plants and animals with a view to the betterment of stock is now attracting wide attention; this work is not confined to experiment stations and wealthy individuals, but the farmers of the country are recognizing the fact that there is more money in choice stock than in scrub animals. Let me quote General Burchard, associate editor of *Hoard's Dairyman*, a short extract of an address to dairymen of Wisconsin, what he called "The Cow Breeder's Shorter Catechism":

Q. How many kinds of cows are there? A. Three.

Q. What are they? A. Dairy cows, beef cows, and combination cows.

Q. What is a dairy cow? A. One that has the ability to turn all the food she may eat and digest, over and

above that required for maintenance, toward the udder, there to be transformed into milk.

Q. What is a beef cow? A. One that turns her surplus food into flesh and fat.

Q. What is a combination cow? A. One that tries to take both forks of the road and never gets anywhere.

Q. What causes the difference in cows? A. Heredity.

Q. What is heredity? A. The biological law by which living beings tend to repeat themselves in their descendents."

Cattlemen realize that they must breed for one thing in cows, and I believe that bee-keepers should settle down to one line of selection. Honey-production, gentleness and color, do not necessarily go together, and the chances of finding all these combined in one colony are small. Which should be chosen? Honey is the object of most bee-keeping, and that then should be the one, and the colony line of selection for the honey-producer. You may arrive at this by selecting prolificness, or tongue-length, but not both without great difficulty, and, therefore, prolificness, which is vitally necessary, should be the first consideration.

In the extensive work of the Maine Experiment Station on egg-laying, in hens it has been found that some of the best formed hens were poorest in laying ability, and *vice versa*. They, therefore, select for number of eggs and let everything else go. In this series of experiments they begin with a flock with an average of 120 eggs per year, and now have many individual hens which produce from 200 to 250. This, too, has been done in a very few years.

The application of statements concerning stock may be transferred to bees, and, therefore, does it not seem time for the bee-keepers to arise and join the procession? Let the honey-producer drop all fads of color, gentleness, and similar things, and breed pure stock for honey, and no longer aim at an "all-purpose" bee.

Allow me to mention here an institution worthy of notice. There was started, about two years ago, an organization known as the American Breeders' Association, and breeders of both plants and animals are uniting in the study of the principles of breeding with a view to improvement of their stock. Breeders of all kinds of plants and animals have seen that they have interests in common, and there is absolutely no ground for a belief that the same principles of breeding do not apply to bees, and I believe no one claims it, yet none of our queen-rearers have seemingly cared enough about the information to be derived to pay the one dollar membership fee which entitles the member to a volume of proceedings worth \$5.00 to any breeder. According to the directory in the first volume, the total number of members interested in bee-breeding is one, and that one is not included in the last published list of members of the National Bee-Keepers' Association. I am happy to say that since then one other person interested to some extent in bees has joined, and he is also a member of the National. I would urge that the National Bee-Keepers' Association join the Breeders' Association, and then let every member who cares

anything at all about the improvement of his bees do likewise. The fee is small and the benefit large. This scarcity of bee-keepers may be due to the fact that the organization has not been properly mentioned in bee-journals. I trust that the editors of the journals will look into this Association, and then give it a little free advertising, for it is a worthy object and is in no sense a commercial enterprise. The editors can do great good in a matter of this sort because they have an easy means of access to the men who should be interested.

Since much scientific work has yet to be started in queen-breeding, it may not be a miss to enumerate some of the approved principles of breeding and apply them to bees. You will notice that I say *queen-breeding*, not *queen-rearing*, for there is a vast difference.

The two great factors of all life, both plant and animal, which make improvement possible are *Variation* and *Heredity*.

It is proverbial that no two individuals of any one species or race of animal or plant are exactly alike, and this of course applies to bees. During the past winter, I examined 500 workers and 1,000 drones, making in all between 5,000 and 6,000 measurements, and the results showed remarkable variability in this species. Drones very considerably more than workers in color and size, and, although I did not have large numbers of queens to measure, it is well known how variable they are. These measurements were of structures, but equal variability is present in the ability to do work, either of egg-laying or honey-producing, as witnessed by the inequality in stores and population of different colonies. There is, then, enough variation.

The other great fact in nature which makes it possible for man or nature to improve a species or race is, at first thought, directly opposed to the foregoing. "Like begets like" is also true. A prolific female produces daughters that are also prolific, though not all to the same degree; but it is an established principle of breeding that excessive prolificness in a female tends to produce in her offspring prolificness at least above the average for the race. If variability existed without this hereditary tendency, no improvement could be made, for at every generation the individuals would again vary in all directions. On the other hand, heredity could do nothing for us in our work of selection were it not for the fact that variations occur, but around a new center, as it were, in each generation during selection.

The weeding out of undesirable stock is the greatest task of the queen-breeder. He must pursue his work by (1), inducing variation; (2), producing large numbers of individuals; (3), weeding out all undesirable blood by breeding from but one, or very few select animals; and (4), fixing the type. In queen-breeding this means that hundreds of queens must be bred and tested every year, and a very few chosen to continue the work during the following season: it does not seem best to use as small numbers as do most queen-breeders. The Funks in their work on corn-breeding

tested 5,000 ears, which bore no relation to each other, and chose *two* as breeding stock. Luther Burbank, the wizard of horticulture, advocates even larger numbers, having chosen 1 in 10,000 from among some of his plants. In queen-breeding we are more restricted by the limitations of any locality, but I think I am right when I say that a breeding queen should be the best in at least 500 tested queens, and the test is to be made by the actual amount of honey produced in a year as compared with the other 499, always assuming, of course, purity of stock. Cattlemen use scales and the Babcock test as the only safe method of choosing the dairy cow; let us use scales in our judgment, and disregard color and other fads when rearing honey-producers.

For "fancy" bee-keeping, as practiced by many amateurs, color or anything else that attracts may be used.

Since mating cannot be controlled in bees as in mammals, it will be necessary to have several colonies producing drones, but every colony chosen for this purpose should have a high honey record of at least one year's standing, and the queen should be quite as good as the breeding queen. The majority of bee-keepers are notoriously lax in this regard. In many cases the drones of every colony in the yard are allowed to fly, and just so long as this is done we will have no advancement, for this one-sided selection is working against odds that the bee-keeper cannot overcome. In defense of such loose methods some queen-breeders argue that a very large number of drones are necessary and that they can be procured in no other way. During the past summer in 16 colonies in the Arlington yard, of the Bureau of Entomology, I produced enough Caucasian drones to stock a queen-breeding yard with an output of 2,000 queens a year, and this could have been done with half that number to advantage. I may also add that pure matings were secured in the very large majority of cases, although that apiary is far from being isolated; I mention this to show that more drones are unnecessary.

We have pedigreed horses and cows, and even pedigreed corn and wheat; why not pedigreed bees? I think I am not asking too much. I hope the day will come when the breeders will advertise as follows:

"I am this year using my celebrated breeding queen Smith 168, which is the mother of a colony which last year produced 50 per cent more honey than my average colony. This queen is the descendent of 6 purely mated queens, all of which were mothers of colonies producing over 300 pounds of honey a year. For drones I am using 5 queens, all of which are mothers of colonies which last year produced over 300 pounds each."

This is not visionary by any means, for it is exactly what breeders of other stock are doing; and it is pleasant to note that some wide-awake queen-breeders are doing almost that now.

There is the recorded case of a colony producing 1,000 pounds of honey in one year; of course this was in a good season, and under careful manipulation, but think what a

valuable queen was lost when that queen was not made the mother of a long line of breeders to be distributed all over the United States. Few honey-producers are so situated that each colony can produce any such amount of honey, but it is necessary to aim high.

There are two points which require additional consideration. The first is the desirability of breeding the race pure. Crosses or hybrids are so variable that they should be avoided except when necessary. Let me quote from Dr. W. E. Castle, of Harvard University, on this point:

"Since cross-breeding is likely to modify characters even when these conform to the laws of alternative inheritance, and is certain to modify them when they give blended inheritance, it should be practiced with extreme caution, and only by the breeder who has a definite end in view, and a fairly clear idea of how he is going to attain it.

"The purity of standard breeds should be carefully guarded, and much attention should be given pedigrees, for even when individual excellence is not apparent, it may be present in recessive or else in a latent state, which suitable matings will bring into full realization, provided the ancestors were superior animals.

"At the same time the breeder should be on the lookout for individual peculiarities of merit. And he should not be discouraged if these are not transmitted to the immediate offspring. A simple character which disappears from the children, but reappears among the grandchildren, can at once be made a racial character, for it is recessive in heredity."

The breeder who uses a mixture of races for breeding is doing something which is very likely to cause him trouble. There is very little necessity under present conditions for this, since a good race may be chosen as a foundation stock which can be surpassed by crossing, only with difficulty, and careful and systematic selection within the race will bring almost as good results with the great advantage of more stability—a point of vital consideration. Let me make this point a little more clear. There is reason to believe that, where some queen-breeder takes up the improvement of bees by crossing, he will outstrip all the rest. He will induce greater variability, and will, consequently, have a greater range of material for selection; he will be enabled to combine the desirable traits of two or more races, and, at the same time, if proper care is used, eliminate the undesirable traits. This can be done purposely only by a person who has a most thorough understanding of heredity and variation and no one else should undertake it, for there is otherwise too great a danger of bringing out all the undesirable traits and losing the good ones. This, then, is why pure races are generally so essential; when the proper men take hold of crosses they will get great results, but the majority of breeders should not risk the handling of fire in that way, and, as for the rank and file of bee-keepers, it is, I think, absolute folly. A bee-keeper may say that he cares nothing for races; that all he wants is honey. All this is very true, but he cannot afford to overlook the fact that nature has laws which he,

with all his independence, dares not disregard. I consider the bee-keeper who fills his apiary with what we may call scrub hybrid stock as a poor bee-keeper.

The second point is the common prejudice against inbreeding. I can do no better on this point than to quote from Mr. N. W. Gentry, who is well known as an extensive breeder in Berkshire hogs. Mr. Gentry has for years practiced inbreeding, and before the Champaign meeting of the American Breeders' Association, in February, 1905, he said:

"From father to son for generations has been handed down the common belief that inbreeding of animals produces offspring of less vigor, less vitality, less constitution in proportion to the extent to which it is carried on continuously, and this belief seems to have been accepted as true without any proving by the very great majority. My experience has led me to believe otherwise, or rather that such results need not necessarily be true.

"Neither inbreeding nor the reverse will be a success unless matings are made with animals suited to each other, that is, having no weakness in common, if possible, and as much good in common as possible. This, in my opinion, is the key to success in all breeding operations and success will come in no other way. In my opinion inbreeding as a rule is very good or very bad."

"I have watched results of inbreeding in my herd for years, and until I can discover some evil effects from it—and I have not yet—I shall continue to practice it."

Mr. Gentry has one exceptional boar known as Longfellow 16,835; he says concerning the stock:

"In my breeding operations I reasoned that if the Longfellow blood was the best to be found (and I have no reason to change my mind yet), and, if I used a boar not related at all, as most would advise, I would lose at first cross half this good blood, and upon another like cross a quarter more, leaving them only one-fourth the Longfellow blood. This I reasoned would be losing a good thing too rapidly. I think I have continued to improve my herd, being now able to produce a larger percentage of really superior animals than at any time in the past."

In breeding it is generally believed that inbreeding is detrimental or fatal, but, fortunately, breeders are now seeing that the idea is usually without foundation. Of course, inbreeding accentuates common weaknesses but we should use it in accentuating strength, as it will when properly directed. Think what it would have meant to bee-keeping if the blood of the Cyprian queen whose bees produced 1,000 pounds of honey had been preserved by inbreeding; and what it will mean if some of the present good queens are kept by this method. I do not advocate universal inbreeding, for it is well known that inbreeding is, generally speaking, not natural, but, even in nature, it is frequent, and it is by no means universally true that it is detrimental. Therefore, if there is reason to think that it is best, it should be fearlessly practiced. How this prejudice against inbreeding arose, I do

not know, but we all know how general it is. Nevertheless, it is true, that the breeders of stock who now practice it are the ones who are getting results of lasting value. On one or two points, I do not wish to be misunderstood. I do not wish to condemn the breeding for color or for long tongues. I really consider color selection a fad, but there are those who prefer the lighter colored bees, and as long as there is a market it will pay to select them. Long tongues would be an advantage doubtless but in whatever way we are breeding let us not forget that increased honey-production is the essential. If these bees have longer tongues, all right and well, but the selection should be made by the scales.

Now you may ask whether in the work of the Bureau of Entomology this problem is to be taken up. I can make no promises for the future, for I am not in a position to outline future policy, but whoever takes up scientific breeding of bees will do a good work, and results seem certain enough. It is not my purpose to confine myself to promises for I do not like to make promises for fear that I may not be able to fulfill them, but I hope this may be done by some one. It may not be out of place to say here that the idea of having any outside aid for this work which it was suggested that I do, was entirely that of Professor Cook and had neither my sanction nor approval, either before or after publication. I desire no such assistance.

But to leave general experimental apiculture, it may not be amiss if I speak of the work of the Bureau of Entomology since I am a representative of that branch of the Department of Agriculture.

During the past few months some work, which may be of interest to the members of the National Bee-Keepers' Association, has been done and I will briefly outline it. Most of this is to be considered merely as tentative, since the investigations are not yet completed, but some idea may be got out of what has been done recently. I will report only on the past and leave the future till a later date.

The best methods of queen-rearing have occupied most of the time during the summer. I have tried several times every method of which I could learn and have tried to test them impartially. I am convinced after these trials that by the use of artificial cell-cups we can get more uniformly good queens than by any other means. For mating nuclei I prefer a comb area about equal to one standard Langstroth frame, divided into 3 frames with about 500 to 800 bees. The style of box is relatively unimportant. I have prepared a short bulletin on this subject which is ready for distribution, and I will take pleasure in sending it to any one who requests it. I can say that the illustrations are fine, since I did not take the photographs myself, and they alone show most of the methods more clearly than is possible in a description. This will be sent to all persons on our mailing list, and any person interested in bees may be included in this list.

A considerable number of queens of the Caucasian variety have been distributed during the summer. These bees certainly surpass any other race, known at present, in gentleness. As to honey-production, not so much is known but I have received some excellent reports. I think there is a great future for these bees, and good queen-breeders are taking hold of them. If selected for honey-production, according to the ideas which I gave a while back, I believe they would be the most popular bee we have for city beekeepers, at least. There seems to be an idea among some of the bee-keepers that the Bureau of Entomology claims that these bees are the best bees known to apiculture. These bees have been recommended for gentleness, and no exaggerated statements have been made either by Mr. Benton or myself, as far as I am aware.

Let me quote from Mr. Benton's Farmers' Bulletin No. 59:

"Caucasians are natives of that portion of Russia lying between the Black and Caspian Seas; are exceedingly gentle, good workers, good defenders of their hives, prolific, build many queen-cells, and swarm often if confined to small hives. They are dark gray in their general color, although the workers show frequently one or two yellow or leather-colored bands; are somewhat smaller-bodied than Italians or Carniolans, have good wing-expanse, and hence are nimble flyers. The drones are rather small and quite dark in color, queens not large, and varying in color from a coppery yellow to a dark bronze."

At the St. Louis convention these bees were discussed from the published statements. I cannot see that too much was claimed for them. It is too early to prophesy as to the ultimate future of the race, and above all they should not be condemned without cause as has been done. Of one thing I think I can be sure—unless care is used in selecting breeding queens of this race we shall hear the bees condemned when it will be the fault of the breeder. This is why I am anxious to see these in good hands until they are tried out.

There has been some misunderstanding as to the method of distribution of queens by the Bureau. The Bureau of Entomology should not, I think, give away any queens which can be purchased in the United States, and thus interfere with the business of the domestic breeders. The regulations concerning this distribution have not been well outlined, and, after consultation with others who have conducted government distributions, I, therefore, drew up the following plan which has been approved by the chief of the Bureau and by the Honorable Secretary of Agriculture:

"To any experienced queen-breeder who will guarantee to rear queens and mate them purely in considerable numbers for general sale, the Bureau will send, as far as the supply will allow, one high-grade breeding queen, purely mated and carefully tested. In addition, several queens whose matings are not known will be sent for drone-production,

since drones are not affected by the mating; all queens, however, will be from good stock, the number to depend on the supply at hand. The breeder making the request must give evidence of his ability to rear good queens, must agree to offer at least 200 pure-bred queens a year for sale to the general public, and must not ask for them an exorbitant price. It is the opinion of the Department that 20 percent more than the current price for Italian queens would be fair. It will also be expected that in future years the breeders will do their utmost toward the improvement in honey-production, at the same time maintaining the purity of the races. The Bureau will be glad to aid breeders of this class to its utmost ability, but will not aid in any way a breeder who offers for sale or sells crossed hybrids of the various races, except in the case of untested queens, and even in that case, every possible effort should be made to get pure matings.

After this distribution, all inquiries to the Bureau will be answered by giving a list of reliable breeders, including those who have received stock from the government apiary; and the name of any breeder who knowingly sends out inferior stock will be dropped. It is not the purpose to interfere with the private business of the persons receiving queens, but these precautions are taken to protect the bee-keepers of the country.

"No applications for queens under other circumstances will be considered. All applications will be considered in the order of their receipt."

I trust that this method will seem fair and just to all, for it is my desire to give everybody a "square deal," and I do not care to distribute queens merely to give something away. I also hope that by this method we may be able to induce a good many first-class men to take hold of this work. I will do everything I can to aid the right men, but careless breeders, and those who give second-grade queens to their customers, need not apply. If I could give you a list of the persons who have written for Caucasian queens this summer, I am afraid you would all go into the business. The present demand is due to notices in ordinary newspapers which were caused by the extreme gentleness of these bees. This is not the kind of fame which I desire for bees being distributed.

Caucasians, Carniolans, and Cyprians are now being included in this distribution, as will be any other races which may be obtained in the future. The Banat, or Hungarian, bees which are also very gentle, are being tested and may be worthy of distribution, but that remains to be seen. If they are, they will be included.

During the summer I found some lesser wax-moths, *Achroia grisella*, and began to breed them in a wire-cloth cage. They behave in much the same way as the other large wax-moth, *Galleria mellonella*, but I think they are more inclined to burrow in the brood-chamber. I asked for information concerning the distribution of this species, through the American Bee Journal and Gleanings in Bee Culture,

and received reports of them from various parts of the country. They are doubtless found elsewhere for they have been introduced into this country several times, and seemingly have later disappeared.

Bee-diseases have received some attention also. Owing to the fact that I have entered the service of the Bureau late, I was not able to get started on this work very early in the summer, and consequently have been handicapped, but the work is of vital interest and worth continuance. Through the kindness of several men prominent in apiculture, I received a large number of samples of diseased brood. The Bureau of Animal Industry, at my suggestion, assigned a competent bacteriologist to this investigation, and between us we have been getting a fair start. So far the results are briefly, that *Bacillus alvei* has been found in every sample of "black brood" and not a single case of foul brood, confirming the work of Doctors Veranus A. Moore and G. Franklin White, of Cornell. No characteristic germ of foul brood has been found. In one sample, from foul brood, which was unmistakably contagious, sent in by my assistant, Mr. John M. Rankin, who is in California, we found a bacillus resembling *Bacillus alvei* in many respects, but on cultivation, it was found not to be the same. When fed to a colony it did not produce the disease, although the feeding continued for over a month. The final outcome of this investigation is still unknown, and I present these few facts merely that you may know what is being done. There is much confusion on the subject of the germ brood-diseases in this country, and I hope it can be straightened out. Evidently bee-keepers confuse these names, or possibly the foul brood of Europe and Canada may not be the same as our foul brood. Please remember that I do not make this as a definite statement: I merely say that we cannot find *Bacillus alvei* in so-called foul brood. The germ *Bacillus alvei* itself is well known, and its characters have been well studied, and what now remains is definite knowledge of its distribution and exact information of a working nature so that the bee-keeper will know just what he can do with the disease. This is the work which must be done. It is very desirable that a large number of samples of brood-diseases be examined from all over the country, and I hope that any members of the National Bee-Keepers' Association who have any such trouble will be kind enough to send me samples. For the present I could do nothing more but report on the presence or absence of *Bacillus alvei*, but I shall be glad to do that as soon as the examination is made. We cannot receive too many samples, and I shall ask your co-operation during the next season.

The so-called "bee-paralysis" has come in for its share of investigation, but I regret to say that I cannot as yet even suggest a cause. No pathogenic bacterium has been found in bees which died of paralysis, and I do not think that there is evidence that *Bacillus gaytoni* has anything to do with it. The theory that certain plants were poisoning the bees and causing the symptom of paralysis, was also inves-

tigated, but I failed to produce the disease when bees were fed on honey mixed with the characteristic alkaloids of these plants. In the meantime I have gone over every word of the literature on paralysis that I could find, and while it is hard to judge from descriptions, which are generally not clear, I am inclined to the belief that several different troubles are combined under the word "paralysis." I sincerely hope that some one can tell us something about this disease before another summer passes, and I would respectfully request that any of the members of the National Bee-Keepers' Association having the disease in their apiaries next summer would notify me and make careful observations. I shall visit some regions where the disease is at its worst, if possible.

A series of experiments on feeding has been begun in which sugar solutions of different strengths are used, for the purpose of determining to what extent the cane-sugar or sucrose is inverted by the bees into reducing sugars, such as for the most part are the ingredients of honey. So far I have been able to get results from only one experiment in which sugar was fed in a 50 percent solution. In this case the water was evaporated until 80 percent of the solution stored was solids, and 15 percent of the total volume was unmodified sucrose—an amount which would at once show a chemist that he was dealing with an adulteration. The remainder of the sugar was the same as that found in honey. These experiments are now being continued indoors, and it is too early to tell what will be the result. If the results are exact enough in the sugar analysis it should be possible to answer that much-guessed-at question of how much honey is required in the secretion of one pound of wax, since in some cases the bees are allowed to build combs.

During the past winter, while Mr. Benton was in the office, packages of seeds of honey-producing plants were sent out to about 500 bee-keepers, but only a few of the reports are in yet, and I can give you no general statement of the result. Some glowing reports have been received of Sainfoin and Serradella as valuable plants, and they seem worthy of investigation on the part of every farmer bee-keeper.

Last June there was established, on the recommendation of Mr. Benton, a sub-station for apicultural work at Chico, Calif., with Mr. J. M. Rankin, Special Agent, in charge, for the purpose of studying special conditions in that State. Mr. Rankin spent some time, during the summer, working on paralysis, but found it more rare this summer than it has been for 16 years, and consequently any definite results were impossible. At this station certain features of our work at Washington are to be repeated as a check. The main difficulty in this station, is the distance from Washington, which makes it difficult for us to keep in close touch.

In his address last year before this Association, Mr. Benton spoke of the establishment of an experimental apiary

at Arlington. This plan was somewhat modified, so that the main apiary of the Bureau is in Washington, with an out-yard at Arlington for the mating of queens to Caucasian drones. In addition to this, permission has recently been granted for the placing of colonies of bees on another farm of the Department of Agriculture, 6 miles north of Washington, for the study of diseases, such as foul brood, black brood, and paralysis, where there is absolutely no danger of contaminating our own bees or those of any other bee-keeper. In this way fresh samples are obtainable, for it is often hard to examine combs after they have been in the mails several days.

As you know, Mr. Frank Benton, Apicultural Investigator, left early in June on an extended trip after new races of bees, under the direction of the Bureau of Entomology. Mr. Benton visited various European countries, and we, from time to time, received queens from him. The uprising in the Caucasus delayed him somewhat, but he finally reached that country and got several queens which, for the most part, reached Washington alive. He expects also to visit India and the Philippines to study the giant bees of the genus *Megapis* before returning, and will send some of them to the United States, if possible. It is certainly to be hoped that he will be able to settle once for all the question, which has been so long debated without many facts one way or the other, as to the desirability of introducing these bees.

Last spring Mr. Benton conducted a rather heavy correspondence with the different manufacturers of cake chocolate, with the idea of inducing them to use honey in place of cane-sugar. Various ones promised to try it, but nothing was done. On Mr. Benton's departure, this was turned over to me, and I visited the Stephen F. Whitman Co., of Philadelphia, when in that city on other business. They took up the matter and report that they have tried in every way to do this but that it is impossible. They, of course, recognize the desirability of using honey, but claim that their machinery is not adapted to such use. It was hoped that this would open a market for a large quantity of honey, but the effort was without success.

During the summer a good deal of routine work was necessary. The mailing list of the office was badly in need of revision, and that took considerable time, and, in addition, as far as was possible, a complete list of queen-rearers, bee-disease inspectors, bee-keepers' societies, and supply dealers was made. These things are necessary in order that we may know just the condition of affairs in the bee-keeping world, and are of great value in the work. At present, back volumes of the American bee-keeping journals are being carefully indexed, which will save much time in looking up any subject. Of course, such work has to be done when there is a lull in our rather heavy correspondence.

In conclusion, I wish to express my personal appreciation of the help which I have received from bee-keepers in various parts of the country since I have been connected with the Bureau of Entomology. Without such kindness it would be

difficult to accomplish anything, and I can only assure you that I shall do my utmost to advance the interests of the industry with your help. I shall appreciate any criticism which may be made of my work, as long as it is based on facts, and shall endeavor to profit thereby; but I ask for neither praise nor blame from anyone who does not know what he is talking about. Let me especially ask for your co-operation in the bee-disease investigation during the coming summer.

E. F. PHILLIPS.

Dr. Miller—I believe that if anything is done to amount to very much in the way of improvement, such as Dr. Phillips has been talking about, it will not be so much by some one special person, as it will be by the rank and file taking hold of the matter. So many seem to get the idea that it will be a queen-breeder. I would like to call special attention to this distinction between queen-breeders and queen-rearers. I would like to ask the question, What percentage of queen-breeders are there among queen-rearers? I don't want to press that question, but I believe all of us to a certain extent can become queen-breeders; and when the rank and file do that, then we will begin to have advancement and improvement in our stock. I do feel like heartily thanking Dr. Phillips, and I wish all who feel with me like thanking him to signify it by a rising vote of thanks. [The members of the Convention arose, and the suggestion was greeted with applause.]

Mr. McEvoy—I never heard a paper in my life that I liked so well as that one.

Mr. Moore—Dr. Phillips, in his very excellent article, has touched on a point that I think we are all intensely interested in, and we have with us one who has perhaps the best experience of any person in this country, and I would suggest he now address the convention on his personal experience in connection with foul brood. I refer to Mr. Wm. McEvoy, of Canada. [Applause.]

Mr. McEvoy—I could not help but take keen notice of what the Doctor was saying about these different kinds of brood—black brood and foul brood—and I can not help but think that there were many mistakes made in some of the kinds that were sent; that they were mistaken for something else. It has been thirty years since I first handled foul brood. In 1875 it broke out in my own yard, and I worked out the cure I have given to the world on that.

Speaking of the kind of dead brood, I meet it every year. Last year all over Ontario and in many parts of the United States there were immense quantities of dead brood mistaken for foul brood, and by many that had had it before, and felt sure they knew what they were talking about. It was simply starved brood. After the apple-bloom failed, for a long period before they touched clover, in many places they started brood, and they ran out of unsealed stores, and when they are caught like that they will not uncup the old honey fast enough to keep pace with the amount of larvæ; the result is death. Part of the brood is well fed, some of it is starved and some does not get enough just before it is

capped. Some of them will die under the cappings and some hatch out, and you cut the cappings and it will be re-capped. The bees are poorly fed. Every year I have been called out in connection with these cases, and I found no foul brood. For every 4 or 5 cells of foul brood you will find 19 or 20 starved in the comb, and this is what causes mistakes and confusion. They say, "Oh, I have had it before and the bees cleaned it out." But sometimes it is foul brood, and it will clean the yard out, and it is just as well to be careful of what they get hold of. The bee-yard is no place for a burying ground or a graveyard. But I would advise that you sacrifice your bees by treating the whole yard as dead brood. Let us go to work and feed them, and give them a double shake.

There have been men in Ontario and the United States who have treated it for foul brood when it was starved brood, and it was feeding that it wanted. This treatment only aggravated it, and it still did not get enough. If the bee-keepers will feed they will not have this ordinary dead brood. Some queens are good feeders under poor circumstances, and others, again, are poor feeders under good circumstances. I have never heard a paper I liked better than that, especially where he spoke of breeding, and I do think 90 percent of all the queens on the continent of America want killing. I like the bees that under trying circumstances will feed the larvæ well; and in feeding that larvæ in these periods we will have bees that will double the honey crop. It will pay to feed during these periods. But come to the disease, that is what so often causes the confusion; it is this finding of so much dead brood. There is lots of it this summer. It took a dark color and almost a blue nature, and it would stretch almost a quarter of an inch; but hadn't the stench, although it had a pretty heavy odor. I notice that, all over, the bee-papers speak of so much chilled brood. That was a little out of place. It was *starved*. The flow shut off, and the bees didn't uncap the old honey fast enough. Feed during these periods, and it means a good deal. Feed, and watch the results, and you will see how fat, and plump, and white the larvæ are. That which is half starved, you will see little hollows that you can put the head of a pin in.

I have not in 20 years opened a hive of bees, but what I have taken a close look; and some places they have said, How do you find the queen? How do you like the color of the bees? I didn't look at the bees. I could see how they were feeding the larvæ. Come to find out, they had gotten the queen from certain parties in the United States; and I would say, kill every one you have got and breed from this good one. The Doctor is right.

The treatment I give is the only practical one. Drugs are of no use. Don't be deceived with drugs. You can't cure any apiary if it is bad. You may use gas, and so on, but where they fill the comb and fill in on the hard crust old foul brood and cap it over, you can't kill that and make a success. The only way to do is to take away the combs

and follow the bees for the honey they take from the combs, and let them build combs for days in bad cases. Now put the honey and case in the bee-yard, and give it one shake and it will generally cure it; but there are also several that would fail, because the next thing they do when they get weak is to fill in the center. The honey to become diseased in a beehive must first of all be stored in a diseased cell. Nearly all the honey in the top of the comb is sound. Why? It is clean honey from the fields in queen-cells. But where it is stored close to the ring, in on the old crust, that is where the disease is.

Mr. Lyons—Do you consider pickled brood has the germ of the disease?

Mr. McEvoy—I never like to say anything about any one else's treatment. If you do the feeding at the proper time you will never have pickled brood. You feed now at the close of the honey-flow and help your bees up the hill. The spring of 1889 was one of the most favorable springs in Ontario. Things went booming along. On May 28 came frost, which was followed by 3 or 4 days of rain. I said to all the bee-keepers, the brood-chambers will be a mass of dead matter. The bees are caught out, the brood-chambers are full, and they are going to use up the unsealed honey; they won't uncap the old stores fast enough, and great starvation will take place. All over Ontario they were spreading, and they had foul brood, and dead brood, and everything, and run short of the honey crop. The last two weeks in May and the first week in June, in 1894, we had three weeks of rain, rain, rain all over Ontario. During that time the bees run short of bringing in stores to keep pace with them, and that year there was a lot of dead brood all over Ontario the same way. Then last spring was a bad one, and the spring before. There is not enough attention paid to help the bees during that gap.

Mr. Lyons—That has been exactly my experience this spring. I had 50 or so of those Alexander feeders and I put them right on after fruit-bloom and it worked very well.

Mr. McEvoy—Pickled brood will turn on its back and turn up. You will notice some of the cells thin capped. The bees as much as uncap and say, What is the matter with you? You will find in some cells that a cap is not cut. The bees have not enough strength to move the jaw. Feed will save all that.

Mr. Rice—Wouldn't uncapping honey answer the same purpose?

Mr. McEvoy—Yes, you are right. That is business, and I do that, too; and I would rather do it while there is honey. Give 2 or 3 frames; do not bruise or scratch it; shave that off neatly and then it will not run. Skip the next night and then give 2 or 3 more frames. Take a jar and turn it upside down and put it on the center of that, and you set that food down where the bees most need it, and feed continuously. In 1894 I tested it. I was feeding, and the food kept going, going, going, but there was a

little drawback about it, that got onto the honey-flow and at last my out-yard nearly went to pieces. But the bees were vigorous. You will get these bees from a fed colony that will come right down in showers. There is a vim, and a snap of life in the bees that are fed, compared to what there is in the others. It is best to feed in this bare period.

Mr. Moore—I wish Mr. McEvoy would help us clear up this question as to the difference between foul brood and black brood, and what bearing it has to a layman; and as to *bacillus alvei* being found in foul brood or black brood?

Mr. McEvoy—I am not able to tell that, when it comes to black brood; I have seen it, and handled it, and treated it the same as the other. When you speak of a specific germ, you are going beyond me. You will have to take the scientist for that. But in either case this treatment has got to come in. No drugs will be of any use with foul brood.

Mr. Hatch—I understood Mr. McEvoy to say that there would be no such thing as pickled brood if we feed between fruit-bloom and clover bloom.

Mr. McEvoy—You will never have pickled brood under those conditions.

Mr. Hatch—I found it in California. I had 250 colonies in one location and I had, half a dozen times, at least, right through the honey season, pickled brood. I had the same thing in 3 apiaries in Wisconsin.

Mr. McEvoy—And running on till the end of the honey season? You will find some of it in combs near the end of the honey season.

Mr. Hatch—How is feeding going to help it?

Mr. McEvoy—Don't let it start. It didn't start them. The bees from some queens are poor feeders of larvæ.

Pres. Dadant—If it continues during the honey season it is contagious.

Mr. McEvoy—No.

Pres. Dadant—My experience is different.

Mr. McEvoy—It will hang on and continue. This year it did continue pretty nearly to the end of the honey season, but I would change the queens in that case when they won't feed their larvæ.

Mr. Hatch—I have changed the queen in one and it had no effect whatever; the disease kept right on the same.

Mr. McEvoy—I never had a case, or saw a case.

Mr. Hatch—This year I saw only one colony that was the least affected, and that only in two cells.

Dr. Phillips.—What difference does it make whether there is a germ or not? was asked. I think it makes all the difference in the world, if we have something in the hive that is going to carry contagion if it is spread; if it is due to some other cause it will not spread in the same way, and the bee-keeper will have to know whether there is a germ there or not, so that he will know how to avoid it.

Mr. Baxter—I have had no foul brood in my apiary, or disease of any kind, until this year I had a case I thought was foul brood. I got scared about it, and I asked my brother-

in-law to come and look at it, but meanwhile I changed queens, and the trouble stopped at once.

Mr. Evoy—It generally will in that case.

Mr. Moore—This seems to be a heresy. Dr. Howard, of Texas, has taught us that *bacillus alvei* was found in foul brood. I have studied all of them, and all the authorities have told us the same thing; but Dr. Phillips comes along and says there is no *bacillus alvei* found in foul brood. I thought an answer to the question would help us to get clear on this point.

Dr. Phillips—*Bacillus alvei* was first described about 1885 by Cheshire. They described it from specimens obtained in England. The second description was that by Prof. Harrison, of Canada. He described it as present in foul brood. Then Dr. Howard, of Texas, described it as foul brood. After that Doctors Moran and White of Cornell got up and found in black brood the same germ. I think, personally, what Cheshire described was what Mr. Moore refers to, and from the other conditions I should judge it was another disease. Let me say here that in every case in which I took a sample of brood I got it from a man who had had years of experience in treating the diseases. I got it from men who know these diseases from practical experience all over the United States.

Mr. Holekamp—Mr. Phillips, when we send you samples of foul brood, do you keep a record of them?

Dr. Phillips—Yes.

Mr. Holekamp—I sent 5 samples last year to Mr. Benton.

Dr. Phillips—I can't say about Mr. Benton's records. I have kept my own. I suppose it can be looked up.

Mr. Holtermann—There is one point in connection with the paper that I think should be brought up, and that is that quite a number of us are very much exercised about the distribution of Caucasian bees. I think it would be wiser if these Caucasian bees would not be spread about at the present time. I may say I am personally very much pleased, indeed, that the Department of Agriculture at Washington is taking this matter in hand, of helping the bee-keepers, and I think it should receive the warm co-operation and assistance of the bee-keepers, not only in the United States but in other countries. I am pleased, also, that they are seeking to find if possible new races and varieties of bees, and improve the race; but for my part I think it would be better if these bees were not distributed as it is proposed they should be, because, as we know, we can not control where they shall go. If we find they are as objectionable as some say, it would be a very serious matter to have them scattered abroad. One man in our own country had 22 queens, and he says at the present date he finds strains of these characteristics cropping up which are confined to the Caucasian bees and he has tried to stamp them out during the entire 23 years. Wouldn't it be better to test them somewhere where they would not spread, instead of scat-

tering them through the country where we may not be able to control them and it may prove serious for us?

Mr. Abbott—I agree somewhat with Mr. Holtermann, but not for the reasons he gives. I don't think the Government should distribute *anything*, but I think the most disgraceful thing the Government does is distributing seed, and I would object to the queens being distributed on the same ground. But it is entirely too late for us to tell the Government what to do. We have a very excellent Secretary of Agriculture, who is wide awake and progressive. And we have a very excellent entomologist, and they have marked out these lines and now the best thing we can do is just keep our mouths shut and let them do what they want to, in my opinion.

I want to say, while Dr. Miller was commenting on this excellent paper he said one thing that I don't believe is so—he said that this would not be confined to one individual, we could all have it. We can't do it. It has never been known that all people have it. How many Burbanks do you think there are in the United States? There is only one. And there are only two or three men that have made any progress in the matter of the Corn Investigation; and there are two or three breeders. Now we have finally found a young man with brains, with energy, and with a disposition to work, and who is peculiarly adapted to this work, and the best thing we can do is to just keep our hands off him and let him go his own gait, and let him have his own way about it, just as Luther Burbank has gone his own gait and had his own way. This work can be done by these individuals, and it will be done, and I think we make a serious mistake. I don't believe in the distribution of anything. I do not agree with Secretary Wilson on that line; and I do not agree with the Government's work, wherever it sends anything. I don't believe in giving away literature and sending it out miscellaneously, and that costs millions of dollars, and some of it is good and some exceedingly bad, and the peculiarity of this paper is that it does not partake of the bad. We have something here that is progressive and intelligible.

Mr. McEvoy—The best you ever heard.~

Mr. Abbott—Yes. There is a man with a disposition to work. Now, let him go; don't let us bother him.

Dr. Phillips—I have been for the last 8 days right among the honey-producers, and I think I know their views in regard to a good many things in addition to Caucasians. I did my best to talk the thing over with them. I will give you their criticisms. In the first place, the criticism was made that these bees are too gentle; robbers will come in and take away the surplus honey. In reply to that I will say, I don't think these bees are gentle enough for that, and just as long as a man does not know how to handle bees he will do the very thing that will irritate them. The other criticism was made that these bees are so gentle that you will have amateur bee-keepers all over the country. I don't think you have to fear much from the amateur; he always

goes to the wall in about a year or two. I am not afraid of the amateur bee-keeper at all. Perhaps I am wrong on that point.

The criticism was made, and the only criticism that I could consider as valid against any race of bees was, Will it produce the honey? If it will not produce the honey we don't want it. In regard to that I don't know enough about it to give a definite answer. Rauchfuss Brothers, of Colorado, have reared Caucasian bees and speak in the highest terms possible of them as honey-producers. They were the ones that recommended them to Mr. Benton for his work.

In regard to the distribution, as soon as the Department of Agriculture gets hold of anything and somebody wants it, what are you going to do about it? To prevent an indiscriminate and unwise distribution I have limited the distribution in the way I have mentioned. It was the only way I could see out of it, and I don't think it is going to be detrimental. The argument came up, you will contaminate all our other races. How much contamination do you get that is any worse than the black bees all over this country? I don't think the conditions can get any worse than they are now with the blacks, Carniolans and Cyprians all mixed up as they are now. I would be very sorry indeed if the Department of Agriculture were to introduce something that would be detrimental. We have enough reports to indicate that this race needs testing, and the Department does not have it in control to say just exactly where these bees shall go.

Mr. McEvoy—How do you manage, Mr. France, with this pickled brood? Does your experience bear out mine? Feeding.

Mr. France—Almost the same thing. This feeding to avoid starvation during shortage has overcome it largely. I would like to add that we are all proud of the valuable paper that Dr. Phillips has given us, and I want, on behalf of the Association, to ask if he will accept the enrollment of the National Association on the mailing list, that anything he gets of value we will all get.

Dr. Phillips—Any person can get this for a post card. If they do not want it badly enough for that it might be just as well to keep it where it is.

Dr. Miller—May I ask Dr. Phillips this practical question for us who are honey-producers? I am working for all the honey I can get to sell it. Is there anything that you think I can do to raise the character of my bees, and to get more honey from them?

Dr. Phillips—I think you can not do anything more or less than keeping the records and cutting out all stock that is not of value; keeping the races pure at the same time.

Dr. Miller—Now, he says, I, an every-day, common bee-keeper, can do something to improve my bees, and I can help him.

Dr. Phillips—In regard to what a honey-producer can do, let me cite an example. There is a man in New York State who has 98 colonies of bees; he has a neighbor 5

miles away who has 200 colonies. One man has selected in breeding for the last 10 years and has inbred very closely. The other man has been buying stock from all over the United States, but not selected in breeding. The man with 98 colonies got exactly the same amount of honey within a very few pounds as the man with 200 colonies, and they both admit they have about the same localities.

Mr. Moore moved, duly seconded, that Mr. Abbott be asked to give his paper this evening. Carried.

Mr. E. T. Abbott then addressed the convention as follows:

POULTRY-KEEPING FOR THE BEE-KEEPER

I want to say that I haven't any paper, neither do I intend to give you the kind of poultry talk that you hear every day. When Mr. Hutchinson asked me to take some part in the program down in Texas, I suggested that he put me on for this talk instead of some bee-keeping talk that I had been talking all these years. This poultry talk of mine is not along the usual lines, and I do not know but what it would be just as well if I didn't give it all. I will talk just a little while along the lines I usually talk, and if you don't like that kind of thing we can easily enough change off. I remember Mr. Root heard me on this poultry talk once down in Missouri. He came in and sat down in front of me and dropped his head down, and put his hand over his eyes and looked fearfully discouraged, and I didn't know but what he was going to cry. Some time afterwards he straightened up. He said afterwards that it wasn't the kind of talk he was expecting, just as though I could teach A. I. Root anything about bees.

Poultry is a broad subject; it is much broader than you can discuss in one evening. There were two or three old hens up in Wisconsin, that got under a pair of stairs and began to scratch and scratch around the leaves and dirt, and after a while they scratched up some several thousand dollars, and the money was found and it got into the papers. I do not know whether or not you read it, but it was in every newspaper, almost, in the United States. Now, hens have been scratching up money all these years, which amounts in Missouri, I think, to something like forty millions every year; in other States they have been scratching up equal amounts, and nothing has been said about it. We have been looking all these years for something we could do in connection with bee-keeping. I will tell you what I do. I milk a Jersey cow and keep some fine poultry, and have for years, and I have been advocating that inbreeding for 10 or 15 years. When I first began to advocate it, like Mr. Holtermann, they said I was upside down, and I was talking nonsense, but I went on until I had some of the finest golden Wyandottes I ever had in my life, the most perfectly marked. The boys thought they were such a good mark for markmanship that they killed them off.

The first secret of success is to know how, and in order

to know how you have to study the hen. She is a peculiar creature. She has had but little study. The reason has been that men inherited a theory that in order to make poultry a success they must turn it over to the women, and as the women didn't know much they wouldn't expect them to accomplish much; it was a kind of a small, one-horse business and the woman was a kind of a small, one-horse affair, and it could all be turned over to her and it would be one-horse all the way through. The man didn't have much interest in it only when he wanted a little money to buy his tobacco, or to get something when he went to town, and then he went to the old woman's purse and got enough to buy a plug of tobacco or a drink. That is about all he knew.

Mr. York—That was in Missouri, wasn't it? [Laughter.]

Mr. Abbott—No, sir; all over.

The great secret of success in keeping poultry is to make the poultry comfortable. I want to give you some good rules that will work out in practice. Now in order to make a hen comfortable, the conditions and surroundings must be such as are adapted to hens. Some people think a hen has no feeling; they think it isn't an animal; it is a kind of automatic machine to grind out eggs and to eat for Sunday dinners; but there is a vast deal more to a hen. If you expect to get eggs—and that is all hens are worth—that is what there is in a hen, is eggs—if you can't get eggs out of the hen you can't get anything out. In order to get eggs out of the hens you must put eggs in. You can't get anything out of a hen you don't put into her. You put it in in the form of feed, and take it out in the form of eggs. And the food must be first, enough to nourish the hen's vital energy, and to build it up; and then there must be sufficient superabundance of food to make eggs, and eggs should always be in a hen, so that you have a circle. You feed a hen eggs in food, and the hen gives you other hens in eggs, and the circle keeps going around and around, but you must supply fuel to run the machine. There has to be eggs put into the hens and then you will get eggs out of the hens.

Somebody in "Gleanings" said: "Gleanings" always has things in it that are so, and things very wise, and sometimes, a small illustration. There was an old man, who, in his condemnation of his poultry business, said he had hatched 320 chickens and only raised 200. Now, a man who doesn't know any more about raising chickens and hens than that, ought not to go in the business. He ought to keep out of the poultry business and go to something else. Now, I say you must make the poultry comfortable and the first essential of comfort is a comfortable home in which the poultry can live. I experimented a little the winter before last to see if it were possible to increase the egg-production, and have a simple house that was inexpensive. I prepared the roost so that I could drop a curtain right down in front of it. They say hens should have air. I believe they should

have some air. Every night I went out to my biddies, just like the mother puts the babies to bed; I went out with the lantern, and found them all lined up on the roost in a nice row, and they would talk to me, and I would pull down the curtain and they would stay there perfectly quiet till I went out in the morning; and in the morning one old hen was the first one to begin, and she would talk in hen fashion and get down off the roost ready for her food. I don't suppose they knew any different, and I don't suppose they appreciated it. The fool hen hasn't got sense enough to know when she is warm, but every day she laid an egg. The average farmer expects a hen to lay eggs under average conditions. I presume in Illinois 9-10 of the hens roost in trees, and 9-10 of the men think hens ought to roost about 40 feet, more or less, from the ground in the tree; and when the mercury is down 20 degrees below zero, that she ought to come out of the tree and hunt around in the snow for a dry place and lay an egg as a return for the kindly treatment she gets! Do you know what I would do if I was a hen and got that kind of treatment? I would swear by the eternals I would never lay an egg. You can't expect the hen to lay under such conditions. She couldn't lay if she wanted to, for it takes all of the hen's vital energy to keep herself warm and live, and she hasn't any extra vital energy for eggs.

Then a word about the hen-roost. The old-fashioned roost was built up on an angle of 45 degrees, and the poles ran one above the other. In the evening when the hens went to roost those poles were loose at one end or the other, and, of course, if they are loose like that at both ends every hen will like the middle best; and every hen wanted to get on the top pole. Hens are a good deal like men, they want to get on the top pole, and when they are trying to get there they don't care a continental whom they knock off. And so the hens start up one after the other, climbing up one on top of another, and you hear them squealing and screeching, and all sorts of noises, and it takes the hens from one to two hours to get settled down, every time. Now, that kind of roost is not the kind of roost to build. The hen-roost ought to be on the level, just as all men ought to be on the level. If I could get the men reduced to proper hen-roost style I would accomplish more for humanity than anything else. We are always trying to climb up above some other. If we all had roosts and had to come home at night and get down on a level, can't you imagine what it would mean for humanity?

Now, then, if you want a hen to lay eggs you must keep her comfortable all the time, and I will tell you one of the things you must do. The average farmer likes a chicken for dinner. He doesn't have to cook it, he doesn't have to pick it; and he doesn't care how much his wife has to work on Sunday, if he can go out to the corner and tell yarns and chew and smoke and have a good time, and come back at half past one or two o'clock with half a dozen of his neighbors and have a good chicken for dinner and have a good, jolly time. He always wants

a chicken for Sunday, but he never thinks of catching that chicken. He never thinks about getting the chicken ready. But Sunday comes and he says, Well, we better have a chicken to-day; John Smith is coming over from the store with me, and I think we better have a chicken.

Well, mother says, it is all right; she don't want to cross him; she knows what will come. She goes out; and every farmer in the country has two or three dogs—a little dog, a big dog and a dog between; the old lady picks out the chicken and says to the boy, "Do you see that old, yaller-legged hen; I want her for dinner." The boy says, "All right, I'll have the chicken." And he blows a whistle. The little dog comes, and he says, "Sick him, Tige. Do you see that hen." The hen starts, the boy starts, and the dog starts. Did you ever know one dog to start without all the other dogs joining with him? The middle dog joins in and the big dog and they run through the orchard, and through the barn, and through the cow-shed, and then run back and forth, and finally the old man joins in the chase, and the old woman comes rushing out, and the little dog is hot on the trail, and the hen comes to the fence, and she tries to go through a crack in it, and the old woman grabs the hen by the legs, and she whirls around, and she takes hold of the hen by the head and goes "whizz."

I take what she has done seriously. She has spoiled one hen for Sunday dinner, because a hen that is chased that way isn't fit to eat; and while the chase was going on, do you know what she has done with the rest of the hens in the place? There is the old hen looking out from behind a box, and there is the old rooster over there that looks out and cackles. Now if they have 300 hens they have done something more, they have lost 300 eggs, for a hen has the most delicate, nervous organism of any animal, almost, in existence, and under such circumstances she can not lay eggs. She won't stop right away, but that will be because she can't. If the farmer had 300 hens, the Sunday dinner has cost him 300 eggs, and if they are worth a cent a piece, he has paid \$3 for the hen he had on Sunday that was not fit to eat.

The way to kill a hen, if you must kill them—I hate to kill my chickens—is to take her quietly off the roost in the morning, and when it is daylight, cut her head squarely off and drop her into a barrel out of sight and cover her up. My printing shop is right next to the hotel and they have chicken every day for dinner. Two brawny women come down there and they take those chickens and hack their heads off, and thrash them around in such a cruel way that it makes the chills run over me, and I feel sometimes as though I will never eat another chicken.

Now about the diseases of poultry. When I used to lecture in the Farmers' Institute they were always asking me about the diseases. There is only about one disease in poultry that is very dangerous. About the only disease we have in Missouri is roop; that is, the catarrh of the head, and it gets more aggravated until it gets into the lungs, and

finally into the blood, and poisons the hen so that she is really not fit to eat: but if taken at the proper time it can be very easily cured. I can tell you how to cure roop. I say it is a disease of the lungs and bronchial tubes, and about the only way to treat it is wholesale. You can't afford to doctor single hens unless they are valuable.

You find the hens are getting diseased, and the way to tell is if they are snuffing. They call it pip, sometimes. You hear it on the roost at night. That is the danger signal. You want to get busy. Get you some sulphur and a kettle, and put some coals in it. Have your hen-house reasonably tight, and when your hens all get to roost put the kettle in the center of the house where you won't burn it up, and throw about half a pound of sulphur onto those coals, and then go out, unless you feel the necessity of the treatment yourself; if you do, stay in; staying in 15 or 20 minutes will do more towards curing catarrh or any bronchial trouble that you have than all the doctor's medicine you can take in a thousand years.

Now you can cure your hens by treating them in that way in two or three nights. If it has got so bad that it doesn't disappear, the best thing to do is to cure them with the hatchet; but don't eat them. When they die you throw them over in the alley and then the rest of the hens go and eat them and then you kill and eat the hens. You might as well have eaten the other fellow at the start. Every one of them ought to be buried out of sight, so far under ground it would not be possible for these diseased germs to be carried to other chickens.

A Member—How do you kill vermin?

Mr. Abbott—In order to kill vermin, you must commence in time. You must not let the vermin get there. When you get a whole lot it is pretty hard to kill them; it is a serious proposition. But in order to kill the vermin you must put a little elbow-grease into your roosts; you must have your roost smooth; you must have your hen-house clean. Vermin hatches in the filth; they don't hatch on the hens; they hatch in the filth, and find their way to the hens. Keep the filth out of your hen-house and you won't have any trouble with the vermin.

On motion of Dr. Miller the convention adjourned.

THIRD DAY—MORNING SESSION.

At 9:30 p. m. Pres. Dadant called the convention to order, and called for reports of committees, but none being ready to report, the question-box was taken up.

SUGAR SYRUP FOR FALL FEEDING.

"What proportion of shrinkage must be expected in food made of sugar and water in equal parts for fall food?"

Mr. Acklin—Why not say one-quarter.

Dr. Phillips—I tried this and tested the syrup after it had been put in the combs; it had not been sealed, but it was in

condition for honey. When I got through and tested the syrup it was 80 percent of it solid.

Mr. Holtermann—Do I understand Dr. Phillips to mean not a change in the specific gravity of the syrup, but there is no loss in weight in storing? If you feed 10 pounds of syrup the colony gains 10 pounds?

Dr. Phillips—I don't mean that. There is a decided loss.

Mr. Wilcox—According to his answer, isn't there a loss of 20 percent, in addition to the water put in?

Mr. Miller—You are taking half and half sugar, and water. When we make syrup, I think it is supposed that about 2 pounds of water to 5 of sugar will make something of about the consistency of honey.

Dr. Phillips—Honey is about 75 or 80 per cent solid. There is a little water of crystalization in sugar.

Dr. Miller—If that should be straight, 2 pounds of water and 5 of sugar, and if you have put in 5 of water and 5 of sugar, when it is evaporated you have lost just 1-3. I am not saying this is reliable.

Mr. Taylor—I think that is not the question. As I understand the question, when you give the bees 10 pounds of sugar and as much water as you please with it, how many pounds of sugar are there when it is stored in the combs? The bees consume some, and if there is any brood, they feed some to the brood; and my answer would be, it depends on circumstances. If there is a large amount of young brood, the loss will be greater. If it is fed slowly the loss will be greater; if it is fed rapidly, and there is no brood, the loss will not be very great.

Mr. Baxter—I would say this is all guess-work.

Mr. Kilgore—As I understand the question, if I have a colony of bees that is almost entirely without honey at the time of entering winter, how much syrup at half and half will I have to give them? When they have manipulated it properly, there will be the regulation quantity in there to winter, that which we considered to be about 24 pounds, and according to Dr. Phillips' test the waste the waste is about 1-5. In order to have 24 pounds in a colony to enter winter we would have to feed them 30 pounds, half and half.

Pres. Dadant—If they feed thin syrup it will still be thinner when in the cells for winter than if it had been fed thick.

Mr. Kimmey—I am able to state I have tried with 2 colonies, and I took 10 pounds of sugar and thoroughly mixed it with 10 pounds of water, and placed it in a strong colony to obtain capped stores for the winter colonies. With 20 pounds of syrup I got 14 pounds of capped stores. It was done late in the fall after the honey-flow was stopped, as I thought. That was a loss of about $33\frac{1}{2}$ percent.

Dr. Miller—There are two questions: I got one, and Brother Taylor got another. I suspect he has more nearly the right one than I have, and, as he says, the thing will vary very greatly. If you take into consideration the practical question, it was probably intended to ask, how much will you have left for winter stores? It will vary accord-

ing to circumstances, all the way from a very little loss to an entire loss of the whole business, if you feed it slowly enough. If you say you are going to feed fast, and ask how much you will have left, then you might get something with a definite answer. You feed so much, and you will have so much left, but be sure to put in a good deal more than you count on.

Mr. Kimmey—This was fed to a strong colony and fed all at once.

Dr. Miller—I should expect in that case of Mr. Kimmey's the bees fooled him, and were doing something on the sly, and got something elsewhere.

Mr. Wheeler—A great deal depends on another point, and that is, what time of the year you feed. If it is in a warm part of the season, when a great deal of brood-rearing is going on, a great deal more of the syrup will go into the brood.

Mr. Huffman—I can't just agree with that. As I understand the question, it is, what percentage of shrinkage there has to be when it is going to be sealed over.

Mr. McEvoy—It depends a good deal on the conditions of things. If there is a large quantity of food, and it is fed slowly, it will be nearly consumed; but if you limit the number of colonies and feed with a rush it will not; but don't have it too thin. It will be nearly a half.

Pres. Dadant—This question is misunderstood by some parties. Now, all that the gentleman wants to know in regard to this is, what proportion of sweet there will be in the feed, or in the cells, to what there was when he put it in? I think Dr. Phillips has understood it rightly, and told us the proportion that he found, 80 percent.

Mr. Aspinwall—Certainly, if he found 20 percent less there would be a loss that has gone into the cappings. If not capped over there would be a difference also.

Mr. Wilcox—The chemist has simply given us the percentage of sugar.

Dr. Phillips—This was sugar-fed, absolutely no honey in it, and 50 percent of water in the sugar when it was fed.

Mr. Aspinwall—If there was 50 percent of sugar and 50 percent of water, there couldn't be 80 percent of sugar afterwards.

Dr. Phillips—When this sugar was fed it was half and half sugar and water; when we were through and extracted the result, 80 percent of that was solid.

Mr. Holtermann—I don't think this question is one which should take up a great deal of time, because it is not a practical question. This syrup is too thin for practical purposes, to begin with. If I understand the question, it is, what is left, and if it is of any profit at all, that is the practical side of it.

Mr. R. L. Taylor read a paper on,

THE HONEY-PRODUCERS' LEAGUE

FELLOW BEE-KEEPERS:—I say fellow bee-keepers, because what I have to say is for *bee-keepers*, and not for our members who belong to what some one has euphemistically called the

"allied interests"; for, remember, that we have a strong element in our Association, not directly interested, or, at least, not primarily interested, in the production of honey. I refer to manufacturers of supplies, dealers in supplies and in honey, authors, publishers and editors of apicultural books and journals.

It is scarcely necessary to say that there are some phases of some topics that are of great concern to honey-producers, but of no special concern to the honey-dealers; and so of the others.

But I am compelled to go further and say that the business concerns of the allied interests are hostile to those of the honey-producers. Now, do not misunderstand me. I do not say there is any hostility between you—the honey-producers—and the representatives of the allied interests. Far from it. They are good men, strong men, and a necessary part of our Association. I am only calling attention to the fact that in some points our business interests clash. I would have you guard your interests as shrewdly as they guard theirs. They themselves, I am convinced, would not have you do otherwise, for they are upright men and at heart desire your prosperity. You do not always study your own interests as you ought. They, in a fatherly fashion, attempt to guide you, and you are too much inclined to follow blindly. But no man can serve two masters. It is not in human nature that they should adequately care both for your interests and their own when those interests clash. It is a sound principle of law that no man may be judge in his own matter. Burns sounds the same note:

I'll na say men are villains a',
But och! Mankind are unco weak,
An' little to be trusted;
If self the wav-ring balance shake,
It's rarely right adjusted!

You ask for concrete examples. Well, take this: Soon after the white clover season was over some of our leading journals came out with the usual advice to sell your honey early; that the early sellers got the best prices; and, forthwith, bee-keepers, where they had any crop, were tumbling over each other to get rid of their honey at any price.

The advice was bad for your interests in a year of scarcity, but disastrous in a year of plenty, for nothing is so ruinous as a glut in the market, unless it be the concomitant, to-wit: the piling up of honey in cold, damp warehouses to sweat and crack and become ruined. I don't question the honesty of the advice, but given, I doubt not, on account of a vision clouded by some conflicting interest. Dealing in honey may have been involved, or the desire to stir up the tyro to get rid of his honey lest he in his inexperience should neglect too long, and so give up the business in disgust; for know that it is common to all the allied interests to aim to secure and maintain an ever-increasing constituency of bee-keepers. That this should be accomplished is obviously

contrary to the interests of existing bee-keepers. We have room for all earnest, intelligent and stable students of apiculture, who turn in with us because they are birds of a feather. But the majority are not such. They come in thinking to make an easy fortune. They endure but for a time, play havoc with our markets, and then fall out by the way.

Perhaps there are no conditions in which the honey-producer must be more careful to use all his intelligence and caution than in dealing with jobbers and commission men. If you entrust them with honey, the grading is right, or the tare is too little, or your weight of the honey is too much on account of which, or by some carelessness or negligence on their part, the true weight of your honey is not accounted for.

If you express any hesitation about intrusting them with your goods—you have little faith in mankind; if you suggest some condition to test their faith in mankind, that is contrary to business principles.

In 25 years' experience I do not remember that I had one fully square deal at their hands, unless I either required prepayment or delivered the goods in person, until this year; and yet I believe they were honest men—self the wavering balance shook. This year I found the exception that proved the rule. Rather against my judgment, I made a considerable shipment because I lacked time to dispose of it as I have heretofore found most satisfactory. In due time, the report came that the honey arrived in fine condition, that the packing and grading were above criticism, with a check for a larger sum than my bill called for. Perhaps I ought to give the name, but he is present and such men are modest.

Another point! Some of you no doubt have already learned that in the matter of supplies your interests and the interests of the dealer are antagonistic. Some say the dealers in supplies have formed a trust to control prices, or at least have an understanding, that amounts to the same thing. But I am bound to say that as yet I am not ready to go so far, for to form a combine is unlawful, and therefore dishonorable, and I take them to be honorable men. And as yet, it is not to be denied that there are many things that seem to point to a combination. Once one could easily get a reduction from published prices, but now if he suggests it he hardly gets a civil answer. Then there is a constant tendency to crowd prices up unnecessarily. In the case of sections this is perhaps most noticeable. Not many weeks ago a manufacturer of supplies dilated in one of our journals on the outlook for sections. Timber was getting scarce and more costly, so that the price of sections must go up. Indeed, the prospect was that basswood and one-piece sections must go out, then four-piece sections must come in at another advance of 75 cents a thousand; and a sub-editor and a bee-keeper responds in substance, Let them go up; we can stand it.

But we can't stand it if they are not worth it, *i. e.*, if the profits are too high I have what is to me satisfactory proof.

Within the last 18 months I have bought just 25 M. sections, partly one-piece but mostly four-piece. The dealer said he could let me have the one-piece at \$2.70, but the four-piece did not cost so much to make and he could sell them at \$2.50 a M., and those were the highest prices I paid. And this was not a sacrifice sale. The sections were not only all No. 1, but they were made to order.

One reason of the high prices is the branch houses, and the immense amount of advertising done by dealers. You pay for these luxuries without receiving any equivalent for your money.

Another curious argument is used to boom the price of sections. The honey-producer can afford to pay the prices because he gets a higher price still for them when he sells them with the honey. How millennium-like this would sound: Section comb foundation 15 cents a pound only, because the bee-keeper cannot get more than that when he sells it with the honey.

To illustrate how carefully the supply dealers belonging to the allied interests look after their own profits when the interests of the honey-producer intervenes, let me give one or two more items. Information comes to me from a manufacturer of a certain line of supplies that he was arranging to give members of this Association a large reduction in the price of his line of goods. When news of this movement got abroad, he was communicated with by a representative of a company prominent as supply dealers and members of the Honey-Producers' League, with the result that he was compelled to withdraw from the arrangement; the immediate consequence of which withdrawal was that for the time being at least you were compelled to pay for a line of goods much used by honey-producers, a price almost 50 percent higher.

Again, I am credibly informed that glass for shipping-cases could have been bought recently at the factory in small lots at \$1.50 a box, but an extensive dealer also connected with the League, who no doubt buys much cheaper in large lots, sells the glass at \$2.75 to \$3.00 a box—almost, perhaps quite 100 percent on what he pays. No tender regard for the interests of the sweating honey-producer shines forth from profits of such magnitude.

But time and space fail, and what has all this to do with the Honey-Producers' League, anyway?

This League was organized ostensibly to create a larger demand for honey and to hunt down lies about it. But startling to tell, 5 of the 7 offices of the League are filled by men connected with the allied interests, and the strength of the League is from the same source.

So I have written all this to help inculcate the counsel of Captain Standish in Longfellow's "Courtship of Miles Standish":

"If you wish a thing well done you must do it yourself; you must not leave it to others."

If you neglect the counsel as he did, and send someone

else to do your courting, you will surely lose Priscilla. Who is to be benefited by the working out of the plan proposed?

Would you expect to increase the consumption of wheat by advertising? But honey has been known as long as has wheat. Advertising cannot change the tastes of the people, nor increase their capacity for consumption, nor make honey a necessity.

The course proposed is admirably calculated to pique the curiosity and thereby lead many of the ultra optimistic who have a little leisure, to embark upon the apicultural sea. And that is for the good of the allied interests, and doubtless what they want. But do you honey-producers want it? I can see how it would decrease the price of honey, but I cannot see how it would tend in any way to increase it.

What has advertising done to influence the price of honey heretofore? Only the other day Mr. Doolittle, in an article, asks. Why the difference in the price of honey 30 years ago and now? He makes the reduction from 28½ cents to 10½ cents. He does not attempt to answer the question, but I can, and to my own satisfaction at least. It was about that time that the advertising of honey and the honey business began to assume some magnitude, and ever since the advertising has increased yearly and the price of honey has as steadily decreased.

One pretext for the organization of the League is that we used assistance in the disposal of our honey. I know of no such necessity. No one of experience has, I think, any difficulty in disposing of his honey. Insist on an unmanipulated market; ripen your honey well before moving it; get it to the consumer, or to some one directly interested in getting it to the consumer, and there will be no glut in the honey market.

We are informed, too, that the League is to chase the *ignis fatuus* of manufactured comb honey. In my opinion the longer it is pursued the bigger it will look. If let alone it will die. I never yet saw a person that even suggested that comb honey could be artificial. It is impossible for any intelligent person to examine a case of comb honey and believe that it might be artificial.

Traveling salesmen are charged with the lies. They are great jokers, and invent wonderful stories, and will repeat them so often and so long as they will incite or irritate or frighten any one. Disregard their stories and they will drop them.

But if the plans of the League were in all respects unexceptional, why divide our forces? Can any sensible reason be given for it? In division there is weakness. I only quote from an article of our president-elect when I say: The National Association is the proper channel through which all national reforms for bee-keepers should be secured.

R. L. TAYLOR.

Dr. Miller—Mr. President, we are told it is not a good thing to have someone else do our courting. I am not sure about that. I never got any body else to court for me I succeeded very well all alone, and on that account I sup-

pose Mr. Taylor thinks every thing else ought to be done alone. But everything is not *courting*; there is such a thing as my doing something that nobody else might help me at. If I were to try to court a girl, and deputized one of you to go and see her, it is not assured at all that her affections would remain true to me; but if I owed a man \$50, and some other man goes and pays \$25 of that debt for me, will you explain how that is going to hurt me?

Let me throw some of the saw-dust aside and see what milk is in the cocoanut. Here a number of men got together and said to us, We want the truth told about honey. They got some \$1,400 together, and they said what they wanted that used for was to create a larger demand for honey through advertising in newspapers and magazines, its great value as food, and by such other methods as may be considered advisable to the Executive Board. Also by publication of facts concerning the production of honey to counteract any misrepresentation of the same.

Now, do you object to an editor telling the truth about honey in his paper because he is not a bee-keeper, because he will do it free? Suppose he is one of these iniquitous (?) supply manufacturers, if he offers you money you are glad to have it in your Association. If he is willing to pay a dollar to get some editor to tell the truth about honey, don't you want him to do it? It seems to me this is all in the air, yet there is a feeling of that kind, and that these men said, We don't want any misunderstanding. I know I am the President of this iniquitous (?) concern under fire now, the chief devil of the lot, and I know that those men, unless they fooled me, were entirely honest in saying that the truth ought to be told. You were looking for their motives. Now I think I can understand them, I confess. Maybe there is a nigger in the fence I don't see. But I can see this, I think: Here is a supply manufacturer, a supply dealer, anything that hurts the bee-keepers to make less sale of honey or lower the prices of honey, hurts his business. If he can help bee-keepers by having the truth told about honey he is helping himself. If there is that sort of feeling, a new and better use can be made of that money. I am going to read you a resolution made before I knew whether Mr. Taylor was going to be on one side or on the other side:

"We, the Executive Board of Honey-Producers' League, propose (subject to the approval of the majority of the League's members) to turn over to the National Bee-Keepers' Association the funds now in the League's Treasury (about \$1,300) provided that such funds when received by this Association shall be used for the purpose for which they were originally contributed in the Honey Producers' League.

"Further, we would recommend, if these funds are so accepted, that a sub-committee of the National be appointed to expend the same."

Mr. Holekamp—I am one of the Executive Committee Board of the League. I am a bee-keeper, nothing else, and I believe in advertising, and I believe it takes more money than we can get out of the bee-keepers for this purpose,

therefore, I thought it was a good thing if the supply men would help in this matter. The supply dealers are benefited probably more than we are through this advertising, inasmuch as the supply dealer can sell no goods unless we can sell honey at a profit. The more honey we can sell the more goods the supply dealer can dispose of. I don't believe the supply dealers in furnishing this money had any other thought than to increase the sale and price of honey for the bee-keepers, and therefore I was willing when I was asked to go on the Executive Board, to take this place. I had been asking to do more advertising to increase its funds. But after coming here I heard that there was a feeling that if there was anything done with it, it was unfair to the bee-keepers, and, therefore, it is probably better to have the matter done the way it has been proposed, and I voted in favor of doing this. I think we can help ourselves. I know it by my own feelings. I began keeping bees for pleasure, and I used to give my honey away, but my crop was so large I had to dispose of it. I didn't know what to do with my honey until I began to advertise, and, since I am advertising, people are getting the honey from my house. So I believe advertising does us good, and I do not believe the supply dealer has anything else in view other than the benefit that is to help us and to help themselves.

Pres. Dadant—In this matter, if we wish to take the proposal of The Honey-Producers' League, we cannot accept or reject it, but we can recommend to the Board of Directors of the National Association to accept it, or take a vote upon it through the members of the National. We are a very small percentage of the entire membership, and we can pass anything that will stand for the approval of the members. A motion made here, recommending the acceptance or rejection, as you see fit, will undoubtedly have an influence upon the Board of Directors. Therefore a motion now would be in order.

Dr. Miller—As a member of this Association, I move that we recommend that the proposition of The Honey-Producers' League to take over from them this money (some 1,300), to be used by us, and to have a committee arranged to expend it in the way proposed, be accepted and that this be recommended to the Directors.

Mr. Smith—I second the motion.

Mr. Wheeler—I sell honey in Chicago. I go personally to the trade, and in that way I get at the feeling of the people as some men do not. As far as I can see, and know, the people all know what honey is, and they know that the honey they are getting in Chicago labeled as pure honey is pure honey, and they know that the comb honey on the market is comb honey, and pure honey. If this honey is pure I don't think that the labels or printed matter sent out by The Honey-Producers' League, or this National, should bear the names in large letters of the officers.

Pres. Dadant—The question is whether they should accept or reject.

Mr. Wheeler—I want to tell you what The Honey-Pro-

ducers' League has done. This League goes before the public with their circulars put into comb-honey supers, and saying so and so, and then at the bottom they put the name of somebody that is interested in the sale of honey the same as I am. I am a member of the League and of the National, and if this League goes into the National; and if the officers of the League are to be at the head of this department, and use their names there to advertise their goods, I am placed in competition with my own brothers in the same society.

Dr. Miller—I rise to a point of order. He is mentioning something that would not be the case.

Mr. Wheeler—I want to be placed on this market in Chicago on an equal footing with every member of the National Bee-Keepers' Association. I am willing to take my stand on my own goods and guarantee them, but I must not be put in competition with a man in the same society that I am supporting.

Mr. York—I think Mr. Wheeler said he was a member of the Honey Producers' League. I don't find his name on the list.

Mr. Wheeler—No. I said if the Honey-Producers' League joins the National I will be a member of both.

Pres. Dadant—No. The League will be destroyed.

Mr. Muth—If the National Bee-Keepers' Association takes that money and insists upon the names of all these Directors, then I would call that tainted money, and I would certainly be in favor of not accepting their money under any condition. I want to advertise my business, not Mr. York or Dr. Miller or the Lewis Company or Mr. Borden, or any of the Honey-Producers' League or National Bee-Keepers' Association. I wouldn't have the money under any circumstances.

Mr. Johnson—As I understand this question, the effect of this motion, if passed or rejected will amount to this: Whether this Honey-Producers' League shall die right here and we shall take that money, or whether we wish them to continue on and try to do good in advertising honey. I am a member of The Honey-Producers' League, and I produce honey. I have no objection to the League. These people that have not paid anything, it does not cost them anything, and I don't see what objection they can have. The Honey-Producers can not do any harm in advertising honey, and I would like to wish them well, and let them go on and see what they can do.

Mr. Scott—I would like to ask a question: Who has ever intimated that the officers of the Honey-Producers' League should become some of the officers of the National Association? Who has ever intimated anything more than that The Honey Producers' League wishes to turn over the money to the National?

Dr. Miller—That Dutchman right there (Mr. Muth); he says if those names are going to be on, which is intimating those names will be on.

Mr. Kimmey—If I understand it, this money is offered

us to use in a certain manner. I think we better accept the money first, and then after that if we are afraid we will be injured in our business by the names of the officers of the National Association being put upon the notices, that is a matter to be considered afterwards.

Mr. Hershiser—I have lost interest in this proposition since it was first presented to the bee-keepers, about a year ago; I haven't any really clear recollection upon the matter now, but at that time I couldn't see they were ever going to be able to help me. They proposed to raise the price of honey, as I remember it, but the point to which they proposed to raise it was below the point I am able to sell at. I believe if every bee-keeper will take the same pains to advertise his goods that some of us do, this League can not help them. As I see it, the far Western fellows are raising the price of their honey from 3 to 5 cents a pound, by bringing it down to compete with me; I don't want that done; if they will let me alone I will take care of that question.

Mr. Taylor—This Association has a constitution that provides for the expenditure of any money in their hands for the interest of the bee-keepers. Why is it necessary that there should be a condition put in this motion to embarrass the Association after it receives the money? We have a very distinct article in our Constitution that practically covers the same ground, and if this condition is put in, it will only give rise to further discussion and wrangling as to what is the meaning of the condition. I move that the motion be amended by striking out the condition.

Mr. Muth—I second the amendment.

Dr. Miller—The question is, why should you receive the money with the condition attached? Simply this: That money was handed to us for the express purpose which I mentioned to you—to be used for advertising. Now, if the money should be handed over to be used for some other purpose, the man who handed it to us for advertising would not have his wish carried out. If you won't take this gift on our terms, we won't give it.

Mr. Taylor—I want to put this motion in such a position that the Association can vote on it without a condition. If we adopt this motion without the condition it doesn't necessarily follow that we get the money. In the adoption of the motion in that form, if it should be adopted, they can refuse to hand over the money. It is simply a question as to the form in which this Association is willing to receive money. Do they desire to receive it with the condition, or untrammelled? It seems to me if we are going to have the money that the Association ought to have it so that they can handle it without being trammelled.

The question was called for.

The President put the amendment which on a vote having been taken was declared lost.

The President then put the original motion, which, on a rising vote, having been taken, was declared carried unanimously.

The Secretary read a communication from F. E. Brown, giving the report of the National Honey-Producers' Association, as follows:

To the National Bee-Keepers' Association Assembled—

GENTLEMEN:—As it will not be possible for me to be with you at this convention, and as chairman of your committee to organize a National Honey-Producers' Association for the marketing of our product, I take this opportunity to make my report.

I beg to say that the committee found that the producers of honey from every center are anxiously looking and inquiring for our success, and without an effort on our part, many hundreds of dollars were offered for stock as soon as it should be issued. However, we moved carefully and judiciously that the child born at St. Louis convention and named: "The National Honey Producers' Association of America," should have a good "constitution" to build upon; this matter the committee did much hard and effectual work on, but was greatly handicapped, being scattered from the Atlantic to the Pacific; this made the work go rather slowly, and as we were about to make a grand finish, with incorporation papers nearly ready to file, to our great surprise, something, or someone, gave birth to the League. While the latter is not a child of the National Bee-Keepers' Association, yet it is in her house under the same roof, partaking of the nutritious substances that should have gone to the National's legitimate child, until the committee could see no room for both to grow and prosper, and have decided to give away to the League. This is done with much regret, for, as producers of honey, we believe that better results would come to the bee-keeper if they should market their own products, rather than have it done by publishers and manufacturers. The one who produces honey, should also have *some say* what price he should get for it. This can only be done by associating ourselves together in a national way as bee-keepers, not as dealers. It is only natural that dealers, either individually or collectively, will strive to sell us, as bee-keepers, our supplies, and then to buy or sell our honey, thus dictating prices both ways. BEWARE!

Therefore we will have to give up another good work, allow another grand opportunity to pass by, which we fear will not soon again return.

Respectfully submitted,

F. E. BROWN, *Chairman.*

Mr. York—I think Mr. Brown is mistaken, because the League did not interfere with the National Association.

Mr. France, the General Manager, then read his paper on,

BUSINESS END OF BEE-KEEPING

Some people say the business end of the bee is its stinger, but for me it is the long tongue "that improves each shining hour, and gathers honey all the day, from every opening flower."

The business end of bee-keeping means modern, systematic methods, familiar with and experienced in the best methods of handling bees. The rearing, introducing and shipping of queen-bees, controlling of swarming, producing the best quality and greatest quantity of honey per colony his locality can produce; the preparing of honey for market, and getting, in cash, what it is worth, instead of letting other people set the price and time to pay for it. The business end requires the bee-keeper to know what his locality is able to produce at different dates, also when to have his colonies in the best possible shape to get it. If for comb honey, all the sections with thin starters in, in supers, ready to put on the hives; or, if for extracted honey, an abundance of clean, straight worker-combs, all interchangeable. Not later than the close of a honey harvest to plan for the next. Early in the fall to have the bees ready for a hard winter. He has examined the several honey-producing plants of his locality with prospects for next harvest; has decided how many of his best swarms he desires to rear queen-bees from, which ones to rear drones for each apiary; how many swarms for comb honey, and how much extracted honey he wants. In the fall, as soon as the honey is sold, with the cash in hand, he takes advantage of low price of supplies, buying what he cannot afford to make. Then all winter he is getting all his hives made up and painted, brood-frames made and wired; sections with starters in supers ready; shipping-cases and storage for extracted honey in such packages as his market demands.

When you find a bee-keeper as carefully attending to his bee-keeping business as the successful merchant or other business man attends to his business, you will likely find hives all of one size, upper stories, frames or supers are a perfect fit anywhere. Hives painted and set in some regular order in the apiary so as to help the bee-keeper at work. He will have strong colony at the beginning of the honey harvest, swarming under control, and the bees busy gathering honey. No hives with big clusters of bees loafing on the outside of the hive or going to the woods. In my State, while inspecting apiaries, often I do not find all of the above, nor the business end of bee-keeping. Sometimes hives shaded with the tall grass never cut, unpainted hives with crooked, old black comb, half of it drone-comb; bees swarming and going where they please—in short, the bees take care of themselves. This class of bee-keepers seldom have any fancy honey, but such as it is, goes to town to break down prices, which hurts both the producer and market for others.

If a bee-keeper has but a few colonies and handles his bees alone, he should have a method, business-like, so as easily to keep ahead of the work of the bees; or if operating several apiaries, and has some hired help, a small part of the year, each hired hand has his respective duties and is held responsible, so everything goes like clockwork.

When the honey harvest is over, the business end of bee-keeping requires the bee-keeper to know about what the honey crop of the United States is, what dealers are paying,

and what in cash he should get for the different grades of his honey. I fear some of us have only partly finished our bee-keeping education. We have partly learned how to get all the honey our locality produces. We get some nice comb honey, but have by far too many unfinished sections, too many sections that will not case up well, too many grades and a poor market. Are we not to blame? The merchant spends much time and money to get trade, in advertising, displaying goods. Yes, each clerk must undergo a training of neatness, pleasant ways to await on customers. By his business methods he knows the daily markets, when and where to buy as well as to whom to sell goods on credit. Then let us spend another hour studying how the manufacturer or professional man succeeds. All by strict business principles enforced. Can we not take a lesson?

When I go into honey commission houses and see the untidy, dirty cases of broken comb honey, several grades in the same case, thick and thin combs together, fancy combs in front of a case of poor honey, leaky packages of extracted honey, I wonder the commission dealer gets as good prices as he does. Who is to blame? Large bakeries now buy honey in car-lots at prices the average or smaller bee-keeper can not afford to sell at. He must sell to consumers, in such packages as such market demands. For my home market I find the 2, 3, 5, and 10 pound syrup or friction-top, cans nicely labeled, the same as all canned shelf-goods, sell best. For farmer trade and shipping market, the 5 gallon flat-top, jacketed can with 3-inch screw cap, and bail handle, costing 35 cents each to any National member. Honey in this package goes over all railroads west of Chicago as fourth-class freight, billed "Honey in cans entirely encased in wood." I have no trouble to sell tons of honey in this package. Only in my home market, I sell liquid honey in winter, unless to some one who is a traveling salesman for me, going from city to city, and he has no place to liquify honey. For such customers, I remove the can from the wood jacket, set the can in hot water a little while, until the honey is liquified, then return the jacket and ship. This winter I have two such salesmen, one selling from 4 to 15 of those cans in each town. My home market (city of 3,500 inhabitants) uses at least 10,000 pounds of extracted honey and 500 pounds of comb honey each year, no one selling from house to house, but in every store in town where groceries, meat or provisions are sold, is the above-size labeled honey-cans; prices in each store, all alike, and marked on each package by me. Customers pays same anywhere, my house or town.

If I buy goods of my dealer he makes a profit on his goods in exchange, or if I draw cash for honey, I allow him 10 percent commission. Tons of my honey are sold this way in several cities. Why can't others do likewise?

To-day I called on a Wisconsin bee-keeper using business principles (by the way, he is here in the room). This year he got a pretty good harvest of 7,000 pounds fancy comb and 8,000 pounds of extracted honey, while his neighbor bee-keepers got less than half as much per colony. He also got

a much higher price for his honey than his neighbors, who loaded in the same car; all cash at car. He uses fence separators, No. 1 plain sections, and extra-thin foundation; all hives leveled on stands, everything kept clean and tidy, while those other parties say "no use of all this." Remember, he got *twice* as much per pound as some of those parties. A few winters ago this same man was to read a paper at our State bee-keepers' convention in February, but when the date came, with the thermometer indicating 30 below zero, he wrote me his bee-cellar had cooled down *2 degrees*, and he must not leave his bees.

While at his house to-day he told me many neighbor bee-keepers were judging the amount of winter stores by lifting the hives. On examination, he found they were fooled, as many combs were heavy with bee-bread instead of honey. Excuse me for being personal in illustrations, but it is these *little* business ends of bee-keeping that pay. Let us think about such things, and in the future keep a better account of all expenses and sales so that at any time we can tell the number of colonies of bees, pounds of honey produced and sold, to whom sold, what kind of advertising paid us best, etc. Let us attend more bee-keeping conventions, read more carefully the bee-papers and bee-books, ever remembering this great land we call ours, is large enough for us all. With charity for all, and honest hearts, using the business end of bee-keeping, we continue in the sweetest occupation of our republic—bee-keeping for pleasure and profit.

N. E. FRANCE.

Mr. Moore—I would like Mr. France to state the style, net weight, and prices of the packages he gets for his honey for local trade.

Mr. France—I would rather use a 10-pound pail, as it is a little less work; but in spite of all I can do to try to crowd the larger package, students, who are largely consumers, buy the smaller packages, so that the 3 and 5 pound tins get rid of the larger portion of the honey. I have the 1, 2, 3, 5, and 10 pounds in the grocery stores. The 3's and 5's are the ones we have to renew. My price has been 8 cents a pound net for the honey, and then add the cost of the can to that, with no cans returned.

Mr. Hershiser—The cost of putting up the smaller packages is greater.

Mr. France—Yes, but having some hired help, when we have rainy days, they say, "Mr. France has a lot of work for us down at the bee-house, there is no play to-day;" so that the cost that way is not very much.

Mr. Hershiser—I put up a larger quantity in jelly glasses and I am able to net 13 cents a pound for them. I presume I have put up about 14,000 of the packages; and the honey I sell as low as 8 cents is put up in the wholesale package.

Mr. Holekamp—How do you keep these packages from leaking?

Mr. Hershiser—I cut a little cap out of paraffin paper just a little larger than the top of the jelly glass. Then force the

tin-top of the jelly glass down over that, and it practically seals it, and it doesn't leak.

Mr. Bartz—As to the tin honey-package, isn't it stated in the bee-papers that tin is detrimental to honey? If this is so, I should like to have it stated here.

Pres. Dadant—That is so if the tin is made of lead. I have had as large experience as anybody in keeping honey in tin, and we have kept it for years. When it is cut, and the iron is shown, it rusts and darkens the honey. But with good tin after 5 years the honey will come out just as bright as the first day.

On motion of Dr. Miller the convention adjourned.

THIRD DAY—AFTERNOON SESSION.

At 2 p. m. Pres. Dadant called the Convention to order.

REPORTS ON INCORPORATION.

Mr. Abbott—The majority of the Committee on Incorporation of the National Association have decided that it is not wise to incorporate under present conditions. The Committee is composed of 5, and 2 were in favor of incorporation and 3 against.

REPORT ON EXHIBITS.

We, the committee, find the following articles on exhibition:

By N. E. France—Samples of 60 kinds of honey from nearly every State in the Union; also from Japan, Portugal and Peru.

Mr. Clyde Cady—Section honey in pasteboard sections.

R. F. Holtermann—12-frame Langstroth hive, with portico, and screen for moving bees—double door for ventilation, cell-detector and packed cover.

The A. I. Root Co.—Full line of bee supplies.

Twin Baby Nuclei, by Arthur Stanley.

Twin Baby Nucleus, by A. K. Ferris.

Hive by Doland Sherburne.

Wax-extractor by O. L. Hershier, with 1½ pounds of wax from 18 pounds of slumgum, from the German wax-press.

A selection of comb and extracted honey by Louis Werner.

A hive by unknown exhibitor.

Super of honey by unknown exhibitor.

Samples of honey in 4 x 5 sections by Theodore Fluegge.

Seven-inch comb-honey case of 24 sections, N. E. France.

MORLEY PETTIT,

A. K. FERRIS,

E. J. BAXTER,

Committee.

REPORT ON RESOLUTIONS.

Resolved, That the National Bee-Keepers' Association in convention assembled do hereby tender a vote of thanks to

the Chicago-Northwestern Association and friends for the fine hall and accommodation for the entertainment of this convention.

Resolved, That the convention tender a vote of thanks to all who have prepared papers for this meeting.

Resolved, That this convention recognize the great help which Federal and State Government can accomplish by bringing the people the value of honey as a food, and the method of utilizing and keeping the same and in connection therewith, we would heartily approve of the issue of such bulletins as No. 140, on "Uses of fruit, vegetables and honey," issued by the Department of Agriculture for Ontario, Canada; and that a vote of thanks and appreciation be tendered the Honorable Nelson Monteith, Minister of Agriculture for Ontario, Chief of the Department, and that a copy of these resolutions be sent to him.

Resolved, That it is the sense of this meeting that the Board of Directors be requested to publish the pamphlets directed to be published at the meeting of the National held at St. Louis last year.

Mr. France stated that the pamphlets spoken of were referred to at page 74 of the report of the St. Louis convention.

Pres. Dadant put the motions to oppose the various resolutions presented, which votes having been taken, were declared carried.

REPORT ON AMENDMENTS.

The committee have put their report in the form of a question as follows: "Is it advisable to divide the territory of the National Bee-Keepers' Association into districts and have each district elect one director?"

What will you do?

Mr. Holekamp, in speaking to the motion, suggested that if the country were divided up into 12 or more districts, as might be considered advisable, and have each district elect a delegate who would be expected to look after the welfare of that district, and to look after the increase of membership, that he believed much more good would be accomplished than was being done at the present time. He thought the membership could within two years be made 10 times as large as it is at present.

Mr. Moore supported that view and presented the following resolution, duly seconded:

Resolved, That it be the sense of this convention here assembled that we recommend that it be an amendment to the Constitution, that there shall be a representative upon the board for each State in the Union, and for each Province in Canada; the resolution to be submitted to the membership in proper form.

Mr. Hatch was in favor of decreasing the number of members upon the Board of Directors rather than increasing it.

Mr. Kluck expressed the opinion that if a Director were elected from every State in the Union that the Association

would have a body so cumbersome that they would not accomplish anything.

Mr. Moore stated that he thought it would meet the views of every person to add to the general motion that the Board of Directors shall elect from among themselves an Executive committee, one for each 10 members of the Board of Directors.

Sec. Hutchinson stated that he did not see any use in having directors that did not direct; he thought it would be a good thing if the territory were divided into districts, and every State which had 200 members would elect a director, and every group of adjoining States making up 200 members, would elect a director; that he would support such action.

Mr. France stated that the Association did not want any larger Board than they at present had, but he suggested that the territory be divided up in proportion to the number of members, and if that was done something would be accomplished.

Mr. Abbott moved that the following be substituted for the motion before the house:

Resolved, That a committee of 3 be appointed by the chair, one of which shall be from Canada, to divide the United States and Canada into as many districts as there are now Directors in the National Association, having as near as possible an equal number of members from each district, according to the Report which is about to appear, and that thereafter these districts be permitted each to elect their own director.

After some discussion the President put the motion to substitute Mr. Abbott's resolution for the resolution offered by Mr. Moore, which, on a vote having been taken, was declared carried.

Some further discussion followed on the substitute after which Mr. McEvoy moved, seconded by Mr. Taylor, that the motion be laid on the table.

The President put the motion, which, on a vote having been taken, was declared carried.

The President called on Mr. H. M. Arndt to read a paper entitled,

SUCCESSFUL EXPERIENCE IN THE MAKING OF HONEY-VINEGAR

As an introduction to this paper on successful vinegar-making, I wish to say that if it is of any value to the beekeepers at large, a part of the thanks is due to George W. York, although he personally did none of the experimenting. He and I, under the firm name of "The York Honey Co.," expended hundreds of dollars on my instruction, experiments, and the manufacture of honey-vinegar.

Vinegar is produced by the action of oxygen on alcoholic fluids, under the influence of ferments of which the active constituent is acetic acid.

Honey-vinegar is usually made by the old, long process, which takes about one year; but it can also be made in about

5 weeks, by the quick process by means of generators. In either process, honey-water must ferment, to produce alcoholic fluid, which can be converted into vinegar only by powerful oxidizing agents.

I will speak briefly on the old way, as it is familiar to most of you. You can utilize the washings of honey-cappings, the rinsing of cans, barrels, or waste honey in any form, for the sweetened water. This is put into barrels, with one head out, the wider the barrel the better, as the more air-space the better chance the bacteria have to work, as they need air. You can hasten the fermentation by adding yeast or by acetic-acid bacteria, commonly called "mother of vinegar," and let it go through about the same process as you would for cider-vinegar. Always keep it in a warm place, and covered with a thin cloth to exclude the dust. In about a year the alcohol will be almost worked out, and the oxidation will stop. You will then have honey-vinegar, of grain strength in comparison with the strength of the sweetened water. It is then ready to be barreled and put into the cellar for future use.

The quick process, with which I am more familiar, is one that is hard to explain, on account of the many details and chemical changes that one must understand in order to use the process successfully.

To be a first-class, practical vinegar-maker, one should be somewhat of a chemist. My ability as a chemist being very limited, I will try to tell you in plain terms how The York Honey Co. proceeded.

What first induced us to make honey vinegar was to utilize all waste honey, such as inferior honey, the washings of barrels, tanks and empty cans—in fact, all honey that would otherwise be wasted in the warerooms of an up-to-date bottler and dealer in honey.

In the first place, I took a course of instruction in vinegar-making, under a first-class instructor, standing at the head of my class, also at the foot, as I was the only pupil.

We secured two generators, casks for fermentation, a complete cooper's outfit; a saccharometer, a vinegar-tester—in short, everything necessary to carry on vinegar-making successfully.

A generator such as we used, is a large, open-top, round tank, carefully filled and packed with long, curly beechwood shavings, to within a foot of the top. On top of these shavings is a close-fitting, round distributing-board, filled with many small holes equal distances apart. There are several vent-holes about 18 inches from the bottom, and also a large faucet within a few inches of the bottom. There is a hole about 2 inches below the distributing-board, so the temperature in the generator can at all times be observed. In addition to this, there is a close-fitting cover on top of the tank to prevent the aldehyde from escaping too freely.

The fermenting casks are nothing more than large, open-top, wine-casks.

It takes about 50 pounds of honey to run a generator properly for 12 hours, so we decided to start only one. It

takes $1\frac{1}{2}$ pounds of honey to each gallon of water to make a 40-grain vinegar. The proper proportion can be had either by measure or by testing the mixture with a saccharometer.

Forty-grain vinegar means 4 percent of pure acetic acid in the vinegar, or 40 grains of acetic acid to every 1,000 grains of vinegar. Stock tested by the saccharometer, for every percent shown by this instrument you will get a 4 or 5 grain vinegar. It varies according to the completeness of the oxidation. Stock testing 10 percent should give at least a 40-grain.

Having everything in shape, we will proceed to turn the sweetest of sweets into vinegar.

To make stock, the fermenting tanks are nearly filled with water and honey, in the proportion of 1 gallon of water to $1\frac{1}{2}$ pounds of honey. Add to this mixture a specially prepared malt yeast to start a rapid fermentation. (The temperature of the room should be at all times about 70° degrees.) In about a week this will be almost worked out, and fermentation nearly stopped. To hasten the oxidation, the shavings in the generator are soured with vinegar, so when the stock is poured in at the top it trickles over the soured shavings.

Charge the generator every $1\frac{1}{2}$ hours with 6 gallons of stock, having all the vent holes open, and soon the oxidation will start.

The oxidation in a generator creates a damp heat, but it is as true a fire as there is in a stove, and if you keep a stove as a model, and think of the alcohol as your fuel, and the vents or air-holes as the dampers, you will not go far wrong.

Keep charging from the stock in the fermenting tanks every 90 minutes until the shavings are well saturated, and the fluid runs out of the faucet at the bottom. Then let it stand until the generator draws, and warms up. You can tell whether or not it is drawing by putting a candle in front of an air-hole; if it blows out, it shows that the temperature is greater outside than in the generator; if the light is stationary, it shows that the bacteria have begun to propagate and have raised the temperature equal to the outside, and in a few hours you will find that the light is drawn in. Then the oxidation is in full operation, and the temperature inside exceeds that outside. You must then begin to watch at the thermometer hole, near the top of the generator, and when the temperature gets above 85, charge with 6 gallons taken out of the bottom. If there is not that amount, add enough stock to make up the full 6 gallons. In about 2 hours examine the drafts and insert in the air-holes plugs having $\frac{1}{4}$ -inch holes, to decrease the size of the air-holes.

During the day take 6 gallons from the bottom and put in the top every 90 minutes. If the charge is short of 6 gallons add enough stock to make up the shortage. Charge 12 gallons at night; and close the drafts; in short, "bank your fire" for the night.

The large vinegar-makers have automatic chargers, and keep it up all night.

Aldehyde is the intermediate composition between alcohol and vinegar; it is a very volatile liquid, and if you are not careful, it will nearly all escape. The weak alcohol is converted into aldehyde by the bacteria, before it becomes vinegar. If you give the generator too much draft, the aldehyde will be lost, so you can see the drafts are as important in a generator as in a stove.

The charging from bottom to top is continued until the vinegar does not gain any in strength; then every other time 6 gallons of vinegar are taken from the generator, and stored in casks for the market.

For every gallon you take from the generator an equal amount must be added at the top, from the stock.

The most profitable and best way is to run the generators in sets of 3, one above another. Start the stock at the top of the generator, and by the time it trickles through the 3 generators, it comes out vinegar.

It is very essential that the generators should be correctly packed with shavings, kept perfectly level, and charged with greatest regularity, so that the stock will be equally and regularly distributed. One of the most important things is to keep it drawing, for if the fire gets low, the bacteria, after they have no more alcohol to work on, will turn around and destroy all the acidity in the generator; in the course of a few days putrefaction will set in, and the generator will be dead. It will then take weeks to restore it to its former condition.

Vinegar can also be made by the quick process, in small quantities, by using rolling vinegar generators.

The chemical changes in the manufacture of vinegar are alike in both processes, but in the quick method advantage is taken of the oxidizing action of the vinegar fungus. By vastly enlarging the surface of the liquid exposed to the air, at the proper temperature, we can reduce the time occupied from about one year to 4 or 5 weeks.

At the present price of honey, pure honey-vinegar can be manufactured on a large scale for about 15 cents per gallon, and perhaps cheaper. I have sold honey-vinegar for 40 cents per gallon.

If any present would like to convince themselves that vinegar made in so short a time is first-class I will gladly give them a small sample to take home to try. I am sure a trial will convince them that honey-vinegar, made in the way described, is not only good, but as good as the best.

H. M. ARND.

Mr. Cummings—Mr. Arnd said in his paper to leave it a year in a barrel. I think that this can be aided a good deal by having the barrel swung, and every time you pass near the barrel, swing it and it mixes it. The air in that way gets in and it oxidizes it more rapidly.

Mr. Strong—I have an uncle in Ohio who, some 20 years ago invented what he called a vinegar generator. This one Mr. Arnd speaks of is what was then known as the shaving generator. My uncle got what he claimed to be an improvement on that. It was simply a series of shelves, raised one

above the other, and the fluid was passed over them and exposed to the air. It dropped from one shelf to the other and was continually passing back and forth until it got to the bottom, when it was good vinegar. The strength of the vinegar would depend upon the height of your generator. If it was not long enough it would require passing through again, but the result was good, strong vinegar by the time it had passed through.

Mr. Arnd—That process had the same chemical action exactly. If you put it on shelves or a long trough, or anything else, it would be all the same.

Mr. Hintz—I have had some experience in making vinegar from honey, usually made from washings of the cappings, and I have never succeeded in making vinegar that was good and strong, and which gave good satisfaction to my customers until it was about 2 years old, and now I find vinegar at that age seems to be liked very well—so well that they return and get it a second and third time.

Mrs. Honaker—I believe vinegar made with pickles in small quantities will keep just as long as any other. We make it by putting sweetened water in 20-gallon jars and put a fine cheese cloth over that. We keep them in an upstairs room for about a year, and we have the best luck with it.

RIPENING EXTRACTED HONEY—DIFFERENCE IN QUEEN-CELLS.

“Should extracted honey be further ripened or evaporated by artificial heat?”

Mr. Hershisier—Let the honey stay in the hive until it is thoroughly ripened by the bees. Don't remove it until they get through with it. Only use artificial heat where bottling the honey.

Mr. Lahtrop—I agree with Hershisier.

“Before shaking the bees to present swarming, how can a bee-keeper tell the difference between queen-cells, if built under the swarming impulse, or for superseding?”

Mr. Taylor—For superseding they are generally a small number and about the same age, while for swarming there is a considerable number of different ages.

Mr. Rice—I think any practical bee-keeper would know by the strength of the colony. If they are going to supersede, the colony is decreased in number.

Mr. Holtermann—I asked that question. I don't know with any degree of certainty. I consider that a very serious defect in connection with shaking bees, and I came to this convention to try to get some light upon the subject. In going through a large number of colonies you can't very well make a careful examination and find out whether the cells have all got the age before you begin; and as far as the evidence that that colony has depopulated, and so on, I have not succeeded in finding that a satisfactory test.

Mr. Taylor—If cells are built for superseding at swarming-time it will result in swarming. So that I don't see any particular benefit in knowing one from the other.

Mr. Holtermann—If you break down the one that supersedes, you have stopped the superseding.

BEST HIVE STAND.

"Which is the best kind of hive stand?"

Mr. Wilcox—Generally speaking, a stand that will hold 2 colonies, no more and no less, and of such size and shape as you desire to accommodate your hives, and the location of your ground, and so on.

Mr. Holekamp—I set my hives on bricks.

Mr. Wilcox—The objection I have found to that is that moles will undermine one corner and the hive tip over. That is why I want the stand long enough to hold 2 hives.

Mr. Strong—I have an apiary of 100 colonies, and I put 4 bottles under each hive, and that is permanent. They do not freeze or break.

Mr. Hintz—I build a stand for each colony of bees. I take 2x4x18 inches long, and nail strips about 2 inches wide across those, and I set one hive on each stand.

ADVERTISING HONEY—MATING QUEENS.

"What can be done by the National to place honey where it belongs as a food?"

Mr. Abbott—Advertising.

Mr. Wilcox—If we placed it where it belongs we must make extracted honey a staple article. To do so we must produce nearly all well ripened honey.

"I wish to mate queens on a small island, in the lakes, within 4 miles from the shore. Will all the queens mated be absolutely pure?"

Sec. Hutchinson—I should say they possibly would. When I started in to rear queens I had trouble with mismated queens. I Italianized all black bees for a distance of about 3 miles in every direction, and after that there was no more trouble.

Mr. Abbott—I mated Cyprian bees in St. Joseph, and in the city I don't think 1 out of 25 missed; and where my bees were in the country, 2 miles out, I don't think 1 out of 25 hit.

COLOR OF RED CLOVER HONEY.

"What is the color of red clover honey?"

Mr. Townsend—The same color as white clover.

Mr. Davenport—A very light amber.

Mr. Hershiser—I would like to know how they know it is honey from red clover. It blooms at the same time as white clover.

Mr. Hutchinson—One fall we had 500 pounds from a second crop of red clover, and there was nothing else at that time, and light amber is the color, or dark white.

Mr. Wilcox—The reason is because red clover does not yield nectar to any extent until the second crop, and the second crop is in bloom in August after white clover is dead, and before buckwheat is yielding much.

Mr. Davenport—I have known my bees to work very largely upon the second crop of red clover, when there was scarcely any white clover in bloom, and the honey they stored in the hives was amber honey.

Mr. Hershisier—In answer to Mr. Wilcox, I would say that the first crop of red clover does yield nectar, but the petals are so long the bees very seldom get it.

Mr. Stone—I got a good crop of red clover honey one year from the first crop. Until I got Italian bees there was no seed in the first crop of red clover, and after that a good many of my neighbors got as much seed off the first crop of red clover as from the second.

Mr. Hutchinson—When our bees got that 500 pounds of red clover it was all gathered by Italians. The blacks didn't gather a pound.

Mr. McEvoy—I have seen the blacks gather from red clover, but as a rule they don't.

Mr. Townsend—Where I live in Michigan the bees got about 2,000 pounds of red clover honey from red clover alone. This was gathered within two weeks' time, and the color was identical with white clover honey gathered there. I will admit that the color of the white clover honey was not as white as in some other places. I think the color of honey from various flowers varies in different localities.

HONEY CROP INFORMATION FOR MEMBERS.

"Should the National send information from member to member concerning their honey crop, for the purpose of letting members who are short purchase from the ones with plenty of honey?"

Mr. France—Partially that has been done in a private way this season. Several who had more honey than their own market could handle decided about how much they wanted to ship abroad, and made it known to me. I made a table of the list and right opposite I had a list of those who did not have honey enough to supply their customers, and I said, "You go to A.—, he has some honey;" and in that way a lot of the members have been helped through the Association.

Mr. Kluck—I say for one that they should.

Mr. Davenport—I did that last year.

Mr. Abbott—That is what I have been insisting on for the last 5 years, that the National Association ought to be a bureau of information to its members; and every member ought to have a list sent to him so that he would know something about who had honey to sell.

Mr. Moore—Moved, seconded by Mr. Abbott, that the General Manager be requested, when there is a sufficient number of those who want to sell, and those who want to buy, to make up a circular and send it to the members of this Association.

Mr. Kluck—Our General Manager has always done that. If we would notify him that we have more honey than we can dispose of, he will always find a market for it.

Mr. Hershisser—It costs a very small amount to put a line in a periodical to say you have honey to sell. The Association can't help you do everything.

Mr. McEvoy—Where you don't do that, and send it to the Manager, send 50 cents along to pay him.

Pres. Dadant put the motion, which, on a vote having been taken, was declared lost.

The President suggested that the convention appoint a committee of 3, composed of the members most interested in the matter, to report on the question of amendments at the next meeting.

Mr. Taylor moved, seconded by Mr. Wheeler, that such a committee be appointed.

The President put the motion, which, on a vote having been taken, was declared carried.

The President appointed Messrs. Abbott, Holekamp, and McEvoy as the committee.

QUEENS BY REGISTERED MAIL.

"Is it advisable that we ship our queens in the common mail, or pay a little more and ship them by registered mail?"

Mr. France—The gentleman who asked this question made this reply, that the common mail-bag at many stations is caught from a little post on the swing, and you know what the result would be on those queens. In the distribution of the mail, that class of package is almost invariably thrown into the bags, whereas in registered mail the Government requires that they shall be passed by hand from one to the other.

Mr. Hilton—We had this very question under discussion, and a mail clerk of wide experience tells me almost exactly the words that have been spoken relative to the handling of these cages, and you have only to go into a mail-car to see that this is true. These little bags can be thrown for 10 feet, and they may strike the steel rod or side of the car and then drop in. It will cost 8 cents more to send one or send a dozen by registered mail. The registered mail is not handled that way. It will also take about a day more to get through a registered mail package, because there has to be a record of it made by every official through whose hands it passes, so that it can be traced if lost. I believe queens would arrive in better condition if sent as registered matter.

Mr. Holekamp—My experience has been large. We used to send out every day between 50 and 60 small packages, and we found the registered bees did not arrive as soon as the others. We gave up registering altogether, and we had our packages insured, and we did much better than through the registered mail. I don't believe that registering would help.

Mr. Ferris—I have had a good deal of experience in shipping both by mail and express. I have shipped some very expensive breeders, and my experience is, where you want to get breeders shipped properly, do not have them shipped

by express. I have had frames that were $\frac{7}{8}$ of an inch thick, and over an inch wide, smashed in two, shipped by express. You can imagine the result with queens.

Mr. Woodman—In registering, don't you have to put the package in another package, and do it up again? How would you supply air there?

Mr. Hilton—We have envelopes of different sizes in which we enclose registered matter. I don't think there is any question about air. They are pretty close when they get in the mail sacks with 150 pounds of mail on top of them, whether in an envelope or not.

Mr. Eidmann—I am in the regular mail service, and I suppose I handle as much registered matter as anybody in the room. In the case of sending one queen the price per registered mail is the same as sending a dozen, or two dozen. In case you send one the postmaster is liable to enclose it in an envelope and seal it, and it will suffocate, while if you have a dozen or larger bulk it will be tied up and a register tag put on. What Mr. Hilton said in regard to the handling is true, but the delay is not as great as most people think. They take the registered mail as soon as it arrives, and it is taken to the next train, providing the connection is too close.

Mr. Strong—I have had experience along the line of sending bees, and I wanted to test this matter of the danger of smothering in the mail. I took a queen I didn't care to keep, and placed her in an ordinary mailing cage. I got a strip of pliable paper about an inch long and wider than the length of the cage, and wrapped it not less than a dozen times around, and folded it down at the ends as tight as I could wrap it, and I threw it into the mail box on the east side of my shop where the sun would strike it. I left it 24 hours, and I then opened it and I expected the queen would be smothered, but to my surprise, there was a lively buzz in the attempt to ventilate—that was all there was. I tried it again and left it 2 days in the same condition, and the sun shone on it all the time; I continued that for a week, and the queen was still in good condition. This shows to me that it is almost impossible to smother a queen in the mail.

FREIGHT-RATE ON EXTRACTED HONEY.

"Can we have a fourth-class freight-rate on extracted honey?"

Mr. France—North, south and west of Chicago the Western Freight Classification recognizes honey in barrels, kegs, kits, and in square cans boxed, or the round package, which I have here, as fourth-class freight. I believe all the associations will adopt what the Central and Western have, as soon as it is made plain.

Mr. Scott—In speaking of rates and methods of shipping, I would like to say something in regard to shipping comb honey. I have had a little experience in that, and my experience has been a teacher, inasmuch as I have paid higher freight rates a great many times than was necessary. I have

quit it, and I have succeeded in collecting over-charges on shipments of comb honey instead of letting the producer do that. The classification on comb honey is not so plain, but what it is very often misconstrued by agents at small shipping points. They wish to be on the safe side and they bill it as first-class, when comb honey packed in wooden cases should go as second. That holds good all around, and every way from Chicago. We have been paying first-class rates. If you will notice the marking on your freight bills you will see it was invariably sent as honey in glass. The agents are called upon to do the billing. This ought to be done by the bee-keeper in every instance, and be sure to caution the agent that it must go as second-class. I refer him to the joint inspection bureau at Indianapolis. Mr. Barr, who is a high authority on freight rates, says, that many bee-keepers make a mistake in shipping comb honey with the glass exposed. That was advocated several years ago. The freight-handlers can understand what they are shipping. If you have to put in a claim for broken honey, that is where the difficulty will come in.

Mr. Stewart—I ship considerable honey, and there should be different classifications for shipping comb honey. If you want to get the best classification you want to box your honey and bill it "Comb honey in cases boxed." It will then go as second-class freight, whereas, if it goes without boxing, it will go as first-class. Look into the billing of honeys and you will find in the Eastern Classification different classifications. It makes all the difference in the world whether it is boxed or not.

Mr. Holtermann—In the direction of giving instructions as to the best method of shipping different lines of goods, the bee-papers could do something. We have a Railway Commission to bring our cases before, and their decision is final. They can force the railroad companies to give us a reduced rate if they think it just and right. I was on a committee on that question and we decided the bee-papers could help.

DEFENDING MEMBERS.

"Shall the National Association defend its members when spite is at the foundation, and the bees are simply made an excuse for persecution?"

Mr. McEvoy—Where there is reasonable ground, I think the association should defend him.

On motion of Mr. Kluck, seconded by Mr. Niver, the convention adjourned.

THIRD DAY—EVENING SESSION.

At 7:30 p. m. Pres. Dadant called the convention to order and said: "I wish to thank the convention for the courtesy shown me. I have found the members much easier to manage than I expected. I did my part. I think you will all appreciate the fact that although I am not a very good par-

liamentarian, I tried to do the best I could. I started with some trepidation, feeling I would not be up to the task, but behavior of the members has been such that it has made it easy and comfortable for me. So I thank you all." [Applause.]

Mr. Putnam then read a paper entitled,

IN WHAT WAY CAN BEE-KEEPERS SECURE THEIR SUPPLIES AT LOWER PRICES?

Coming in contact, as I do, with many thousands of bee-keepers, I am amazed at the indifference displayed by the 99 out of 100 who are attempting to make a part of their living out of bee-keeping. It is variously estimated that from 400 to 700 thousand people in the United States are to some extent engaged in bee-keeping. Of that vast army scarcely 2,000 can be coaxed, entreated or bribed to join a bee-keepers' association of any kind. I have heard our General Manager talk for hours to a gathering of bee-keepers, detailing the benefits to be derived from organization, and had it not been for the determination of one or two who had originated the movement, the organization could not have been effected.

The first step in the way of lower prices, then, in my opinion, is to awaken interest—to induce the bee-keepers themselves to co-operate. But let us see. What are the conditions? We find that the catalogs read very much alike. Without sections and starters the 1½-story 8-frame hive, nailed and painted, \$2.45; nailed only, \$2.20; 1 in flat, \$1.85; 5 in flat at \$1.70; 10 in flat at \$1.55; 25 in flat at \$1.45 each. The foregoing are supposed to be for retail amounts. The wholesale range is from 25 to 200 hives on a descending scale—50 hives at \$1.35; 100 at \$1.25; 200 at 1.15 each; and finally the carload price of \$1.02 each.

Some dealers put a Chinese puzzle before their quotations, and if you are an adept at rebus deciphering you will make out that A E 5 2 S 8 describes the same articles as mentioned above. One dealer says, "What's the use of all these tables of complicated figures? I will make a flat rate, one hive \$1.85, and give the customer a discount of 25 to 40 percent, according to the amount purchased."

Now there is a discount for early cash orders commencing with 10 percent in September and decreasing as the dull months pass by, until finally in March the net price is reached. Some dealers quote a scale of prices 10 cents per hive lower than above quoted, beginning with one hive at \$1.75 and ending with 92 cents as a carload price. These are printed prices and the wise bee-keeper knows that all he has to do to get a less price is to write to half a dozen dealers or manufacturers and tell them he will give his order to the lowest bidder, and he will get as many different quotations as he does replies. How do I know? Only last month a reputable firm which turns out \$30,000 to \$40,000 worth of bee-hives and supplies a year, and which publishes prices at the highest

rates, named me a price of 85 cents per 8-frame 1½-story hive, and \$2.98 for No. 1 sections.

Only last year, at our St. Louis meeting, I was asked for prices by one of our leading members. I quoted him 92 cents for an 8-frame 1½-story hive, and had the sand taken completely out of me by his firm and positive assurance that my prices were away too high—that he could do very much better down home in York State.

Where is the bee-hive trust? Where is the combination among manufacturers when such a state of affairs exists? Like that other ghost that haunts the path of the poor, deluded bee-keeper—the artificial comb-honey lie—the trust does not exist, or exists only in the imagination of some demagog who is bent on deception and fraud. Nevertheless, the vast army of bee-keepers are paying the long price for their supplies and receiving the short price for their honey; but they are the bee-keepers who do not take a bee-paper, and who do not belong to an organization of bee-keepers; they are the people who wait until the last moment, and rush to the nearest bee-keeper or dealer for a hive into which to hive the bees that swarmed before the bee-keeper thought of procuring a hive.

The vast amount of ignorance in connection with bee-keeping may be illustrated by the true story of the darky boy employed at a dairy, who came to me one September evening about 25 years ago with the news that "Our bees didn't have anything else to do so they thought they would go swarming—yes, mister, they be hanging on a limb waitin' for dat hive." Needless to say he consented to pay \$2.50 for a bee-hive—which, by the way, he never did. And this brings me to an important part of my argument.

THE CREDIT SYSTEM.

The present credit system is responsible for a large part of the increase in price. When the elder Root established the mail-order, cash-with-the-order system of supplying this class of goods, it was a cash system. To-day the middle man buys for credit—not 30 or 60 days, but on long time. He will pay the manufacturer for the supplies when he has sold them. Allow me to quote from page 10 of "Collateral on Merchandise Accounts" under the heading of

"PROTECTION OF PROFITS—RISK IN CREDIT."

"Profit is the ultimate object of all commercial enterprise, and a reliable conservator of profits is therefore of incalculable value to general business. As long as goods are sold on credit, the risk of loss through insolvency of customers is constantly impending. The gravity of this risk is appreciated when one considers how little a dispenser of mercantile credit positively knows about the actual financial condition of each of his customers, and the inside facts of their business. And think of how many accounts are outstanding all the time, each involving risk of loss through the incompetence, inexperience, lack of capital, unwise cred-

its, neglect, extravagance, competition, crop failures, strikes, money markets and speculation, which may cause the insolvency of customers. It is not surprising that the losses through insolvency exceed the losses by fire in the United States."

The above refers to general business. The merchants referred to are those of regular trade—dry goods, groceries, hardware, etc.—all of which are rated and reported by Dun and Bradstreet, with whose assistance it would seem that a comparatively close estimate could be made of a man's financial standing. Nine out of 10 of the people who ask for credit as distributors of bee-hives are men without commercial rating. How much more difficult must be the task of the dispenser of bee-hive credits. As the risk increases, so must the margin of profit, to cover the risk increase, so that the fellows who do pay must also pay for the fellows who never pay.

We have here a range of prices beginning with the cash carload buyer at 85 cents per hive for 8-frame $1\frac{1}{2}$ -story, and increasing under the varying conditions of credit and quantity until the purchaser of one hive set up and painted pays \$2.45, without sections and foundation, or \$2.85, complete and ready for the bees. Does it require a Sherlock Holmes to discern the remedy? Organize! Co-operate! Employ the man from New York to do all the buying for all the bee-keepers! Form one vast co-operative association, and every member will get supplies at the lowest rates! It is being done in spots all over the country. Why not let the movement become general? In my locality an association bearing the name of the St. Croix Valley Honey-Producers' Association has 110 members. A 2-leaf circular is the extent of its earthly possessions. The association actually distributed from April, 1904, to May 1, 1905, about \$1,400 worth of bee-hives and supplies. The purchaser of one bee-hive got it for \$1.02 and freight; the user of 1,000 No. 1 sections got them for \$3.00 at any time through the season, local freight added. The officers and managers of that association received the sum of \$52 for their year's services. The association produced and sold for cash at the car-door 3 carloads of honey. The manager of the association received \$19 for his services in the marketing of honey. The bee-keeper paid the short price for his supplies and received the long price for his product. The same thing has been going on for years in Colorado. The continued success and harmony of the Colorado Honey-Producers' Association is a case in point.

We must not be too narrow in our vision or comprehension. I have shown you the state of affairs as it exists today for the purpose of mutual benefit. There is reason on both sides. The bee-keeper who keeps bees for profit cannot afford to pay \$2.85 for his hives. Neither can the manufacturer afford to sell a well-made bee-hive from good material at 85 cents. He does so at a loss, and if all his sales are made on that basis it is only a question of time when that manufacturer will suspend.

By the way, had you heard of the recent advance in the price of shop-lumber? It is getting scarce and now commands a price of \$3 or \$4 per thousand more than one year ago. Then there are the requirements of standard goods. The lumber must be clear, surface smooth two sides, $\frac{7}{8}$ thick. There are only a few mills that saw lumber that will season out and surface two sides $\frac{7}{8}$. All St. Croix and Mississippi river mills cut green $\frac{7}{8}$, and when seasoned out will barely skin $\frac{3}{4}$. A large box manufacturer and lumber dealer recently remarked to me, "It will only be a year or two more that you fellows can cultivate that $\frac{7}{8}$ fad." It is only the extreme Northern mills that cut for the Eastern market that can supply the full inch shop lumber, and as each mill completes its cut the circle of available material rapidly diminishes, and in consequences the price goes up.

There is no doubt about it—the soft white pine, full $\frac{7}{8}$ thick, is the best bee-hive on the market. A bee-hive may be made from clippings and scraps from some wood-pile, scant thickness and mixed quality of material—some white pine, some Norway, some cross-grained, cross-breed material—and sold for less money than the standard goods, but the quality is not there, and in the long run it will be found that the standard goods will out-last the cheaper article.

Nowhere will the well-tried maxim prove more true than in the purchasing of bee hives—"The best is the cheapest."

W. H. PUTNAM.

Mr. Aspinwall—I note one remark in the paper, that the bee-keepers who are successful have to pay for the ones who make failures, and that have long credits extended to them by a jobbing house which charges for their hives and supplies. That seems to be the rule in every department of human affairs. You and I pay high hotel bills because of the man who uses the soap, and takes the towels away, and breaks things; also the table is extravagantly luxurious probably two or three times more than it need be. There are numerous lines in which the same thing is made to balance the extravagance and wastefulness in all departments. I don't know but that is the only safe way. However, there are lots of things in the article to commend it, notably one, where the Association can buy in large quantities and so purchase at a discount.

Mr. Fred W. Muth then read a paper entitled,

HOW THE PRODUCERS AND DEALERS MAY ADVANCE THEIR MUTUAL INTERESTS

My subject was given me by our worthy Secretary, and, I believe, as a nut to crack; when finished, I will leave you to judge as to whether or not I have succeeded.

As a dealer, I am proud that I am afforded the opportunity to speak to you on this subject, for it is the most important one before this convention, for the reason that it touches the pocket-book of the fraternity.

I will endeavor to give vivid descriptions of some shipments of honey as received; dissect a number of transactions,

and show results. Furthermore, I will prove to you that it is indeed necessary for many producers to use better judgment in grading their honey, and also to use better packages, so that their product will command marketable prices. At the same time, however, I will describe to you clearly some nice shipments of honey, and their results.

Some time ago, a party sent us some 20 odd barrels of honey; it was in the month of September. When they arrived at the depot, we were promptly notified by the R. R. Co., of the leaky condition of the lot. Our drayman, accompanied by a cooper, repaired quickly to the depot, in order to get the barrels into shape, so that they could bring them to the store. When the barrels were rolled over the sidewalk, the honey oozed out from between the staves. The cooper attended the packages at three different times, and even then did not succeed in checking all the leaks. Our motto from the very beginning of our business career, has been, "Money back the day shipment is received," and we always adhere to the motto. However, we cannot afford to lose any money on account of another's negligence. We immediately informed the shipper of the exact state of affairs, telling him at the same time that we could not possibly remit for this shipment until after we had disposed of same. We furthermore stated, that, on account of the poor cooperage, and the close margin of profit, we could not do otherwise, but promised to let him hear from us, at an early date. Well, in a comparatively short time, we received a real nice letter from the A. I. Root Co., in which they asked why payment for this honey was withheld, etc., and at the same time they stated that probably the shipment was too large for us. We sold 10 barrels of the lot, which were shipped out of the city. When they arrived at their destination, we received a telegram from the consignee as follows: "Honey at depot all leaking; refuse to accept." We responded promptly by wire, asking him to please accept the shipment and protect our interests. This shipment had been attended to by an able cooper before it left the store, and we fully believed would stand shipping.

Such transactions are not to the mutual advantage of the producer and dealer. The result—no more shipments from this producer, for he really believed we took advantage of him.

Now, then, I call to mind another shipper, who has shipped us no less than 300 barrels of honey to date. When he makes a shipment, he forwards, with the B.-L. a letter, in which he enumerates the barrels, gives the weights, gross and tare, and describes the quality and flavor of the honey with such accuracy that we know exactly how it tastes by his letter. I wish to add here, that his honey is always free from dirt and is well ripened. Frequently his shipments are sold before they reach Cincinnati, for the reason that we can depend upon his weights, and so far there has never been a leaking barrel received. Many of you know this gentleman, he is a bee-keeper. Such shipments are certainly an advantage to both the dealer and producer.

Two years ago, I visited a bee-keepers' home, and saw 50,000 pounds of comb honey he had produced that season. He cases his honey immediately, and just as it comes from the hive, making no distinction in the grading, places the good with the poor quality, and, should there be a leaky section, does not discard it, but places it in the case with the honey that is sound and solid. Had he graded his honey carefully, we would have bought the lot on the spot. Besides being interested in the bee-keeping industry, he is a farmer, and, by the way, his farm contains 1,000 acres; he is also an extensive stock-buyer. I know his bees do not receive the attention they should, for his other interests crowd him. At the time, I told him that I would buy his honey if he would grade it properly, stating that it would pay him to do so. He replied by saying that he had no difficulty in disposing of his crop. Right he was. We received several shipments from him, just to see how it would sell, but on account of the grading, we could not possibly pay him the price he could have otherwise demanded. Transactions of this kind give rise to the fact that such shipments are neither profitable to the producer nor the dealer.

About one month ago, a farmer walked into my office, and asked for Mr. Muth. When I had made myself known, he said he had 223 cases of comb honey down at the wharf-boat, and asked what we were paying for good honey. Upon my question as to how it was packed, he replied, "In the caps, just as it was taken from the hive." "Why," I said, "isn't it in shipping-cases like that honey over there?" pointing to some nicely packed comb honey. "No," he said, "it is still in the caps, and when I sell it, I want the caps back, as I thought I could probably make a trade, that would be worth my while." I told him that we made no offers, unless we saw the exact condition of the honey, but if he would name a price that would justify, I would go down to the wharf and look at his lot. I can assure you he startled me when he said, "If you will take the whole lot, and return the caps, I will make the price at 14 cents; that's the price at which fine honey is selling." Of course, I was not interested, and I failed to understand or learn where he sold his honey in our city. I really believe he went on down the river. I leave it to you to form your own opinion of such shipments.

Now, let me relate another transaction with a producer, who understands his business. This bee-keeper wrote us stating that he had some 25,000 pounds of comb honey that graded Extra Fancy, Fancy, and No. 1, and that he knew it would please us, for it was graded according to rules and his best judgment. He quoted a price that met with our approval, and his correspondence was so satisfactory that we immediately came to the conclusion that he was a practical bee-keeper, and informed him that we would accept the shipment at his price, provided he would ship us as a sample a few carriers of each grade, and if the same came up to our expectations, he could expect our order for the entire lot. Promptly we received a shipment of 15 carriers. (By the

way, this was the first shipment of comb honey this season).

Right here I wish to relate to you how I disposed of the first cases which I used to feel the pulse of the market. The day this lot arrived, a dealer in bee-supplies and honey from another city was visiting at our store. The 15 carriers, consisting of some 160 cases, were opened, and a finer lot of honey we never saw before. I took one of the cases, told my friend, the dealer, to come with me, and I would show him how to sell honey. Our first stop was at the finest retail grocery in Cincinnati. The proprietor, a fine gentleman, wants only the finest of everything, and is well posted. Passing through the store, saluting the clerks, I was making up my mind as to how many cases I should sell him. "Shall I say 25 or 30 cases?" said I to my friend, "or shall I sell him 40 cases?" I finally concluded to sell him 50 cases and make the price $15\frac{1}{2}$ cents per pound. I walked up to the elderly gentleman, who is always very busy, and business must be done quickly and to the point. I showed him the case of honey: he knew I would offer only the finest. He asked if the lot was all like that sample case. My reply in the affirmative closed that sale of 50 cases at $15\frac{1}{2}$ cents, in less time than it takes to tell it.

When we were again on the street, I remarked how easy it was to sell at $15\frac{1}{2}$ cents, and proposed that we go to another store and try our luck at 16 cents. Well, I did sell 8 cases at 16 cents, and felt that I had not reached the top of the market even at that price. We repaired to the next store, and after quite a bit of hesitation and arguing, I sold another 10 cases at $16\frac{1}{2}$ cents. This price, however, proved to be the limit, for at the next store I tried my very best to sell this party 5 cases at 17 cents, but in vain. He was willing to pay $16\frac{1}{2}$ cents, but no more; sold him 2 cases. Well, in this way, we learn what price the market will pay.

This producer shipped us honey as fast as he could pack it; we forwarded a check the very same day shipments arrived, and in the entire shipment, just think of it, there was not one leaky case! His honey was packed as he stated in his first letter, viz., Extra Fancy, Fancy, and No. 1. The rows in the center of the case were equally as fine as the ones next the glass. This producer is certainly an honor to the fraternity, and if more would follow his example I know there would be less complaints, and lamenting about the cheap prices of honey.

Recently, a bee-keeper shipped us a barrel of bees-wax, at which time he wrote us stating that he knew from past transactions that we will do the right thing by him. The wax was not all choice, but upon its arrival we separated it, allowing him 30 cents per pound for the good quality, and 25 cents for the poorer grade. A few days before I left home, I received a letter from him stating that he received our check for his wax, which was more than he expected. We may also depend upon him for his shipments of honey in the future. It pleases us when a shipper is well satisfied.

Here is another transaction: Recently a party shipped

us 21 carriers of comb honey, 12 over one road and the other 9 over another. Never before have we seen honey packed as this was. The bottom of the carrier was the exact size of one case; there was a thin layer of straw, upon which were placed 5 cases of honey, one above the other. This, with 4 sides and a top constituted the carrier, which could be rolled about as a baggage master would handle a trunk. The condition in which this honey arrived was most deplorable. Five of our employees worked one whole day overhauling the lot. The fruit of the day's work was a great big lot of chunk honey that we were compelled to close out at 6 cents per pound. Withal, we are still in hopes that the R. R. Co. will grant reclamation, and if they do, we will send the shipper a check in full for his shipment. Now, when we forward remittance to this shipper, we will write him a nice letter, telling him how to pack his comb honey in the future, so that it will stand transportation. I venture to say that our advice will not be received with gratefulness, but probably with scorn. Now, if the bee-papers, which are ever ready to do the individual bee-keeper some good, would print slips teaching the bee-keeper how to prepare both his extracted and comb honey for shipment, using as few words as possible, and enclose one of these slips in each copy of the paper for one whole year, believe me, the benefit derived would be amazing.

And last, but not least, I want to relate a little instance that will close my talk on this subject. Some time ago, we opened communications with a producer of comb honey—of whom we had heard, 'tis true, but had never had any dealings with him. Well, he hesitated and procrastinated so long that we finally wrote him stating that he had very little faith in mankind, and that if he didn't trust us, he needn't mind shipping us his honey. He was satisfied with our offer, and decided to favor us with his shipment. When he advised us to that effect, he wrote us saying that since we surmised that *he* had very little faith in mankind, he in turn took it for granted that *we* must have a great deal of faith, and he therefore makes bold to ask us to remit for the shipment, upon receipt of the B. L. Naturally, we are adverse to doing business that way, and his statement necessitated another delay.

Again we wrote him that we are honest and trustworthy, and referred him to a number of prominent persons. I don't know if he inquired about us, but we finally received a letter from him in which he simply stated that he shipped us 17 carriers of comb honey, gave us the weights, and requested us to remit him when the goods arrived. His honey arrived in due time and in good condition, for well did he understand the art of packing, and the honey was *very* fine. We could not have criticised, nor even offered a single suggestion. The same day his honey arrived, we sent him a check that amounted to more than he expected, for the honey weighed more than he had stipulated. I know he held his breath when he received his money, for in one of his first letters he blankly stated that he expected to be fleeced. If

that gentleman is in the audience, I want him to rise and tell you what he named me after he learned our method of square dealing.

This concludes my speech, if I may so term it, and I trust you have benefited thereby, in learning how the producer and dealer may advance their mutual interests. I thank you.

FRED. W. MUTH.

Mr. Eidmann—I wish to say this in regard to Mr. Muth's paper, that I was present at the time that comb honey shipment came from Illinois, and it was just as he stated. I may say Mr. Muth took as good care of the honey as the shipper could have done; he had the shipper's interests at heart. He was not there, but his men were.

MOVED BEES DO BETTER THAN UNMOVED.

"Why do bees removed a considerable distance in spring invariably do better than bees in the same locality not having been so moved?"

Mr. Baxter—I have observed that for 20 years, and those move to out-apiaries have done better than those that had been there all winter. I have been trying to find out how it was, but I can't.

Mr. McEvoy—What time did you move them?

Mr. Baxter—April and May.

Mr. McEvoy—Before fruit-bloom or after?

Mr. Baxter—Before and during fruit-bloom. I moved them from 3 to 5 miles. I have noticed that every year, invariably.

Mr. Stone—I would like to ask Mr. Baxter if he was not a little choicer in selecting the bees he moved. May be he took just the ones he knew were very strong and moved them, and then compared them with some that were weak and strong together.

Mr. Baxter—No, sir, I have not. I have taken them on the average, some weak and some strong, but both did better than bees that were not moved.

Pres. Dadant—I have remarked the same thing. I ascribe that to the fact that the bees having been moved are disturbed and more likely to breed, and produce more heat. I do not know whether that is the answer.

Mr. Niver—We found out in New York State that our home-apiary in the village wintered better, and seemed to get pollen in the spring much quicker, than they did in the out-apiaries. We noticed the same effect when we moved them from the home-apiaries to the out-apiaries; they were the strongest and did the best. It was a better place to winter.

Mr. Aspinwall—As the discussion went on it occurred to me that the cause was the same as the President suggested, that they fed themselves with honey which was largely used to secrete the larval food, or food to supply the queen, and egg-laying ensued.

Mr. McEvoy—I was going to remark the same as this gentleman—the jarring and jolting caused them to uncap

and prepare a little more; at the same time they are led to stimulate more.

Mr. Wheeler—I have noticed the same thing, but I attributed it to the fact that where we wintered our bees we didn't pay any attention particularly to the flow of honey. It was the most convenient place. When we start an out-apiary we are always thinking about the location, and we are more apt to take them to a place where there are more honey flowers.

Pres. Dadant—In the case of Mr. Baxter, the bees were moved to places where there were other bees, and they did better than the bees that were on the spot.

Mr. Baxter—In some instances I practice the feeding in the spring to stimulate and move the combs as occasion may require, to get as much brood as possible. I have done that in these apiaries from which I have taken these bees, and if it was the result of stimulative feeding, why didn't those bees profit from that stimulative feeding, as well as these that gorged themselves with honey on the trip?

NUMBER OF COLONIES REPRESENTED.

"How many colonies of bees are represented in this convention?"

Mr. France—In regard to the National Association, I have a good many objects in view in the Annual Report to make it of value to its members. One is the crop report, and it is not half completed because the members did not give me their reports. It is not satisfactory. I would like to make these volumes something that you would retain in future years, and care for them sufficiently to bind them.

Mr. Hershisier—Couldn't it be bound better when it reaches the bee-keepers?

Mr. France—Yes, it could. That crop report is of a value that many of you do not know. In Michigan they get up a leaflet bulletin, and that has pretty nearly marketed the honey for Michigan. You get it largely, though, in the rough, and in the full report later on.

Pres. Dadant—I hope the members will bear that in mind, and when they receive the blank from our Manager that they will pay more attention to it. I trust most of you are not among the guilty ones.

SHIPPING COMB HONEY.

"What is the best method of shipping comb honey in less than car lots?"

Mr. Muth—If they are 24-section cases the best method is carriers containing 8 cases each, with straw underneath and handles on the outside, and marked with great big letters, "Handle with care. Comb honey. This side up." You can ship it in that way from one end of this country to the other, if it is done right. Mr. Taylor understands it better than I.

Mr. Taylor—Everybody knows my method. The shipment I made, to which reference is made, I shipped in carriers that would hold nine 24-pound cases; it would hold 3

in the bottom and 2 upon each one of the 3—9 cases. In the bottom I put 3 or 4 inches of straw. I think peastraw is first-rate, if one has it; it is sort of springy and does not pack together so much as some other kinds. Have the carrier so made that it will retain the straw, and then put in the cases upon the straw. I generally have one case at each end that shows the glass a little. I don't know whether that is an advantage or not. I sometimes think it is not. I sometimes think a person handling it, if he sees the glass, may be a little more careful.

Mr. Muth—Right here is a point. The truck man or railroad man just likes to put a foot through it for fun, and then stick their fingers in to taste the honey. Turn it around the other way, and they won't do it.

Mr. Taylor—Then I give directions upon the top of the carrier, "Keep this crate cross-wise of the car with care." That is all there is to it. Putting it cross-wise of the car makes the sections stand lengthwise of the car, so that they will stand a great deal more julting than the other way.

Mr. Hintz—How do you pack the 9 cases in a carrier?

Mr. Taylor—Put 3 in the bottom side by side, and then upon each one of them, 2; that makes 9.

Mr. Wheeler—Do you put two handles on the side?

Mr. Taylor—The carriers are so made that there is a place to take hold of them. The handles don't stick out on those carriers. If I were making crates or making carriers to ship honey, I would make them so that they would hold 6 cases instead of 9, and be handled more easily, and perhaps more safely. So that there would be 2 piles of 3 each instead of 3 of 3 each.

Mr. Hintz—You have nearly 400 pounds?

Mr. Taylor—No; they would run about 25 pounds to a case; 9 times 25 is 225—perhaps 250 pounds besides the packing.

Mr. Muth—I believe the carriers that contain eight 24-section cases, with carriers all the way through on each side, are more preferable, because two men can handle them better. I remember with one shipment we had to have a strong man go down there and help, and I had to go down, too.

Mr. Aspinwall—I believe Mr. Muth has suggested that the bee-papers send instructions to the comb-honey producer as to packing. How would it do for the jobber to do so every time a letter was sent or received?

Mr. Muth—We are always doing that. We are going to put them in printed form.

Pres. Dadant—I believe a private letter would be read with more attention than printed circulars.

Mr. Muth—Whenever we get a shipment of honey that is real nice, if we can criticise we always try to tell the shipper where it could be better.

Mr. Scott—It might be added to what Mr. Taylor has said, that in making up the crates the slats are always up and down in a carrier crate, and it is just as handy to have this part to which the top of the up-and-down boards are

nailed about 8 or 10 inches longer than the crate is to be. That leaves 4 or 5 inches at each end to stick out, and that is suggestive itself to the railroad man to take hold of that. And be sure and mark it comb honey. I was at one time checkman in a freight-house, and when we could see anything of that sort we were in duty bound to caution the truck man to be careful. That does some good in one way, but it is to your disadvantage if you have to collect a claim when the officials come to it. Cheap hay is as nice a cushion as I have ever seen—even excelsior, but it is finer, and the bottom of the crate has to be tight.

Mr. Hershiser—Have you seen hay made into a rope and put around? It is twisted in a rope, and it is more of a springy nature.

Mr. Wheeler—I would like to ask Mr. Muth if he thinks it at all advisable to use packing on the sides and top of the honey, also between?

Mr. Muth—No, sir. Down below only. Then put them close so that they don't jar. Don't show the glass. That is all rot.

Mr. Niver—I found in shipping honey quite extensively in York State that it was very nice to have a large circular printed in large letters to put on top of the case; and the most important thing I have found to put on that case was, "Don't handle on a 2-wheeled truck." That is what breaks more honey than anything else, by tipping the honey. The angle at which it is held is just right to hit the edge of the section, and drive the honey out of the comb. I found that was the main breakage point. Put that label on, and ship them without any carrier.

Mr. Muth—The railroad company will not receive honey for local shipment in single-case lots.

MEMBERSHIP FEES.

Is the acceptance of members at 50 cents, when an association joins the National in a body, fair to the other member who sends his \$1.00 in?"

Mr. Muth—Yes. Be grateful.

Pres. Dadant—My impression is that the time is coming when we will get members in no other way.

Mr. Kannenberg—I think the member who pays the dollar has the same chance as the other that pays the 50 cents.

CHANGING FRAMES—LEAVING HONEY ON HIVES.

"Will it pay me to change the Standard Langstroth frame when nearly all of my 200 hives now in use contain the old-style of loose-hanging frames, which are 9½ inside?"

Mr. France—I would say no.

"Is honey injured by leaving it on for days after being capped, where extracted honey is taken off?"

Mr. McEvoy—When it can possibly be taken out soon after it is capped, the honey is thicker than if left later.

Mr. Kluck—In a wet fall and cold weather it may do

that; in a dry climate and dry weather it won't make any difference.

EXTRACTING FROM SAME COMBS YEARLY—POUND SECTION.

"Is extracting from the same combs every year right? If not, what is the objection?"

Mr. Baxter—I say yes, of course, every year. I have combs I have been using for 25 years, and I can't see any difference in the honey. I have combs as black as the ace of spades, and the honey is white.

"Why not have a section that will hold, when well filled by the bees, one pound?"

Mr. Hershisier—Because you can't get such a section. Sometimes the bees will fill a section made to hold a pound, but more often it won't hold quite a pound; whereas, if you get a section a little larger than that, that will hold a pound when not well filled, it will hold more than a pound when well filled.

Mr. York—When you get the bees to put in just a pound, you will then have a section for it.

"How would a section be $4\frac{1}{4} \times 5 \times 1\frac{3}{8}$ for holding a pound of honey?"

Mr. Muth—It would be impracticable, because we have so many different sizes of sections on the market, and they are a humbug, 9 out of 10.

Mr. McEvov—It takes too much wax.

HONEY DEALERS AND CARLOADS OF HONEY.

"Why do honey-dealers ship carloads of Colorado and Cuban honey to commission men, to a white clover market?"

Mr. Hershisier—They do that to take advantage of the good market which the clover honey has made.

Mr. Muth—That question is wrong, because they don't ship on commission.

"Why don't the honey-producers and sellers get together, and then do business?"

Mr. Wheeler—I think they are together.

Mr. Muth—They do.

"Why do bee-keepers ship their honey to commission men?"

Mr. Muth—Because they know no better.

Mr. Taylor—Because they haven't a cash buyer.

TAKING BEE-PAPERS.

"Should a bee-keeper take more than one bee-paper?"

Voices—All of them.

PREVENTING BEES FROM "DRIFTING."

"What is the most desirable position to place hives in the yard to prevent 'drifting,' especially when setting them out in the spring, or placing them for swarming?"

Mr. Hershisier—The term "drifting" means where bees are set out from the cellar, when they take their first flight,

when they come back they are likely all to settle in the most convenient place.

Mr. McEvoy—In many places in Ontario that happened last spring, in the front rows, with the majority of the bees. If the rows had been kept back farther from one another it would have been better.

Pres. Dadant—I think you have more drifting because you don't pay attention to putting them back in the same spot. If you put the bees back in the same spot where they were before the winter, you will have very little trouble. Put the covers on the stand and bring the hives back to that spot.

Mr. Huffman—I had some trouble last spring. The day I set them out it was a nice, warm day, but it was windy and they went to the south end of the yard. I couldn't prevent it.

"Will bees drift when returned from the cellar to the same stands?"

Mr. Hershisier—I asked that question in order to get a chance to answer it. I moved my bees about $\frac{3}{4}$ of a mile and placed them in the cellar, and when I placed them out again they were set right near the places where they had been wintered. I found last spring that my bees drifted very badly, and it wasn't because they were not returned to their original stand.

Mr. Taylor—I don't think there is any difficulty in preventing that drifting when you take them out at the right time. Never take your bees out when it is warm. That is contrary to what is talked of, but I don't practice it any more. I take them out when it is rather cool—too cool for them to fly, a little before soft maple. At all events, take them out when it is a little cloudy and cool, so that they will stay in their hives; and when they come out they will come a few at a time and won't fly far, and will learn the new location.

FUMIGATING FOUL-BROODY COMBS.

"Has fumigation of brood-combs exposed in a tight room ever been tried on foul-broody combs with formaldehyde?"

Mr. France—Yes, and as a rule not successfully.

Mr. McEvoy—It will never be a success in an apiary.

STOPPING LIES ABOUT COMB HONEY.

"How can we best stop or prevent lies about manufactured comb honey?"

Mr. Muth—Don't try to argue with foolish people and foolish reports. Say nothing.

Mr. Stone—I have never found a better way to beat that lie than just to explain to them the difficulty of the rolling out of the foundation comb, and then ask, How you are going to roll out a cell an inch deep, and as fine as silk all around?

HONEY OOZING FROM MASON JARS.

"What causes honey to ooze from the common Mason fruit-jars when they are not filled quite to the top, and are kept level?"

Mr. Hershiser—Capillary attraction.

Mr. Arnd—I think by screwing down the top it compresses the air and forces it up through the rubber.

"What does the National Bee-Keepers' Association do, or what is it going to do, for members of such associations who pay half their dues to the National?"

Mr. Holekamp—In my work in our State I have sent out many hundreds of circulars asking bee-keepers to join our association, and I have received many and many a letter in which the question was asked, What are you going to do? What do we get for our money? I have answered those letters to the best of my ability. Formerly the National Association held out the inducement that we would defend the bee-keepers against unfair prosecution. A resolution was passed that we pay only half the expenses of defending the bee-keepers in such cases. I put in that question to find out what could be done for them, because it is certainly of great importance that these bee-keepers can receive an answer which would bring in applications. We have protection that is worse than nothing to them. If a plain bee-keeper in a town must pay half the expenses of defending himself, it is better for him to pull out.

Mr. Stone—The question is put from the wrong thing. The man that pays the dollar has become a member of the National, and is the one that ought to have asked that question, because the one that joins the State Association and pays half a dollar in the State Association, and half a dollar in the National, and gets the benefit of the State Association, gets as much in the National as the one that pays his dollar.

Mr. France—The point Mr. Holekamp wanted to bring out was this: When A gets into trouble with neighbor B, and gets into a lawsuit now, the Association asks him to pay one-half of the costs to get him out of it.

Mr. Stone—Does he, by joining the National, get fully paid for the defence?

Mr. Taylor—There is no difference between them.

Mr. France—As a word of explanation in that line, when this was first started the Association over-reached what it should have done. It did pay every dollar of it, and we foresaw that it was going to be ruinous to the Association, inasmuch as it had the record of never losing a case, and our members were over-stepping their privileges with their neighbors, and were doing things they would not have done had they not been members of the Association. I submitted it to the Directors, and in order to keep that class of our members from further getting themselves and all of us into more of those troubles, we decided to let them pay part of that. Dr. Miller's motion at that time came up, and was

passed to let him pay half, and I want to say it has reduced the expenses of the Association a lot, and stopped a good many promising lawsuits. The Association is doing, as it has from the beginning—all possible to protect and defend every member attacked in any unjust or illegal way, with instructions that we pay not to exceed one-half, or over \$100, without permission of the Board of Directors; and the expenses on any case not to run up to over \$200.

On the other hand, that is only one of the things that the Association has been doing. It hopes to continue to help market the honey, and to get better packages to market it in. I found to my sorrow that we have not a good standard for honey in the United States. On that point, I got samples of 84 kinds at St. Louis last year, and had to pack them before they were all in the shelves, to save them. I could have sold that lot of samples and realized from them a little profit, but I said, No, I have made arrangements to divide those 84 samples and submit them to three of the best chemists in the United States, one of them being in the United States government department. They know them by a number. We will have, in time, a chemical analysis by 3 expert chemists, of 84 kinds of honey. That is an analysis for the purity of the honey. From the reports I have got in now, there is over 11 percent of difference. The worst of all was from a sample of honey that has been held for a term of years.

Mr. Hershiser—I would like to know from Mr. France whether there are many people who decline to join the Association because the Association does not extend full protection to them in case they get into trouble. I would like to ask, further, if that is the case, if it would not be possible for the Board of Directors to use their discretion as to whether a person is entitled to any protection or not, instead of limiting them to one-half.

Mr. France—The motion defines this, but I was instructed to allow a variance according to the individual case. In reply to the other part of your question, Have we gained or lost members by this change in the line of paying one-half of the members' costs? I desire to say we have gained two members where we lost one. Many of them said, I believe that is a good thing; the bee-keepers will be a little careful as to what they are doing.

Mr. Taylor—I may say in partial answer to Mr. Hershiser that in case of necessity the Board of Directors would pay more than one-half of the expenses. It depends upon the case. They can use their own discretion.

On motion, the convention closed at 10 o'clock p. m., to meet at the call of the Executive Committee.